DOCUMENT RESUME

ED 165 679 HE 010 971

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TITLE A Proposed Regional Plan for the Expansion of Optometric Education in the South.
INSTITUTION Southern Regional Education Board, Atlanta, Ga.
PUB DATE Dec 74
NOTE 162p.; Some illustrations may not reproduce well due to marginal quality of original
AVAILABLE FROM Southern Regional Education Board, 130 Sixth Street NW, Atlanta, Georgia 30313 ($4.00)

EDRS PRICE MF-$0.83 HC-$8.69 Plus Postage.
DESCRIPTORS Contracts; Educational Assessment; *Educational Demand; Educational Supply; *Health Occupations Education; Health Personnel; Health Services; Higher Education; Maps; *Optometrists; *Professional Training; Regional Cooperation; *Regional Planning; Regional Programs; *Southern States; Tables (Data); *Universities
IDENTIFIERS Alabama; Arkansas; Florida; Georgia; Kentucky; Louisiana; Maryland; Mississippi; North Carolina; *Optometry; South Carolina; Tennessee; Texas; Virginia; West Virginia

ABSTRACT

Concern about the adequacy of existing optometry schools to meet the needs and demands for optometric education in the South prompted a study, to result in a proposal for expansion of education in the field. The results showed that there is a shortage of optometrists in each of the 14 states of the Southern Regional Education Board (SREB) region, and a need for additional schools of optometry to meet the citizens' minimum requirements. A minimum of two additional schools are needed in the near future. It is recommended that they be established in academic health centers of universities and be developed as regional resources through the contracts-for-services program presently in operation in the SREB states. Tables and somewhat detailed state maps illustrate the study. (MSE)

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A PROPOSED REGIONAL PLAN FOR THE EXPANSION OF OPTOMETRIC EDUCATION IN THE SOUTH

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A Consultants' Report
Prepared for the Southern Regional Education Board
by Wesley N. Dorn, Ph.D.
Thomas W. Mou, M.D.
Henry B. Peters, O.D.

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Abstract

There is a shortage of optometrists in each of the 14 states of the SREB region. There is a need for additional schools of optometry to meet the minimum requirements of the citizens of the region. A minimum of two additional schools are required in the immediate future. It is recommended that they be established in academic health centers of universities and be developed as regional resources through the contracts-for-services program presently in operation in the SREB states.

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December, 1974

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FOREWORD

The Southern Regional Education Board (SREB) is committed to the orderly development of graduate and professional education of high quality in the South, utilizing where possible cooperative, interstate approaches.

During the past several years, there has been increasing concern about the adequacy of existing optometry schools to meet the needs and demand for optometric education. In response, the Board at its 1974 annual meeting requested that a proposal be framed for regional expansion of this field.

Accordingly, staff engaged a small consultant team to propose such a plan by December 31, 1974. They were Dr. Wesley N. Dorn, Executive Director, Maryland Council for Higher Education; Dr. Thomas W. Mou, Provost for Health Sciences, State University of New York, and Dr. Henry B. Peters, Dean, School of Optometry, University of Alabama in Birmingham.

The following is the completed report of these consultants, which should be helpful to states, institutions and SREB in considering further how to meet regional needs in optometric education.

Winfred L. Godwin
President
Southern Regional Education Board

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APPFNDIX A

For Each SREB State:

Present and Projected Needs for Optometrists

Distribution of Optometrists by County

"Critical Shortage" Counties for Optometrists

Distribution of Board Certified Ophthalmologists by County

ALABAMA	A - 1
ARKANSAS	5
FLORIDA	9
GEORGIA	13
KENTUCKY	17
LOUISIANA	21
MARYLAND	25
MISSISSIPPI	29
NORTH CAROLINA	33
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Chapter I

I. Need for Optometric Education

A. Current and Projected Demand

1. Need and Demand for Optometric Services

Need is not the same as demand in the lexicon of health planners. There is both present need and demand for optometric services, and there is every likelihood that the need and demand will increase in future years. The development of the Early Periodic Screening Diagnosis and Treatment Program (EPSDT) as part of Medicaid will translate children's needs into demand. Similarly the development of National Health Insurance (NHI) will provide a mechanism which will convert the vision care needs of many adults into demand. Of all the people who need vision care approximately 90 percent have problems that can be adequately served by optometrists, seven percent require specialized medical and surgical services, the remaining three percent are blind.

a. The General Needs of the Population

As the population of the United States continues to increase, there is a corresponding expanding need for professional health services, including vision care. Utilization of vision care services increases with education and income, both of which continue to increase. The visual demands of our advancing technological society are likewise increasing, adding further to the needs for vision care services; e.g., in transportation, industry, business and recreation. Furthermore, new scientific developments in vision care add to the range of vision problems that can be successfully treated and the

choice of treatment modalities; e.g., contact lenses and low vision optical aids add to the range of skills and services demanded of optometrists and manpower requirements.

b. Special Needs of the Elderly

The decreasing birth rate and greater longevity in the United States are resulting in a greater number and proportion of elderly persons in the population. The need for vision services is known to increase with age, both because of physiological changes in the visual system and from the increased incidence of ocular pathology. Most of the population over 60 years of age have special vision problems, and the initial contact with the health care system may occur via an optometric examination. Major eye disease problems increase with age, and these can be identified by the optometrist and referred to an opthalmologist or another health professional. A national health survey made by the U.S. Public Health Service in 1965-66 found that as persons got older their need for vision care increased substantially; by the age of 65 or over, 90 percent of the men and 95 percent of the women wore corrective lenses at least part of the time.

c. Special Needs of the Young

Studies have indicated that there is a significant number of children with undetected vision problems. Among children of elementary school age, about one in four have vision problems, often unknown to parents or teachers, that interfere with their educational progress. Many of these problems can be corrected by physiological techniques, i.e., special lenses or special

exercises. In addition, the self-perceived need of the teenage and young adult population for vision care is increasingly important. Although the contact lens has provided a therapeutic technique for certain previously untreatable eye problems, it is regarded by many as primarily a cosmetically acceptable alternative to spectacles. It is recognized that there are major psychological benefits to the patient. Educational planning should not place aside such human needs in the design of programs that address the service needs of the nation now and in the future.

2. Demand as Indicated by Optometry/Population Ratios

Optometric manpower is widely but sparsely distributed in the SREB states. None of the 14 states reached the national average of 9.1 optometrists per 100,000 population in 1973, while 10 out of the 14 were in the lowest 25 percent of the United States (see Figure 1). The Southern states range from a high of 7.9 to a low of 4.3. The ratio of optometrists per 100,000 population for each state and its corresponding national rank is shown in Table 1.

3. Critical Shortage Areas

The Bureau of Health Resources Development, Health Resources Administration, Department of HEW has established critical shortage areas for optometrists for purposes of cancellation of health professions student loans. A student who borrows money from the federal government to attend optometry school under the Health Professions Education Act of 1972 may have up to 85 percent of this loan forgiven if he establishes his practice in one of the "critical shortage" areas for a period of three years. There are 806

Figure 1

RATIO OF OPTOMETRIST TO POPULATION BY QUARTILES

1970

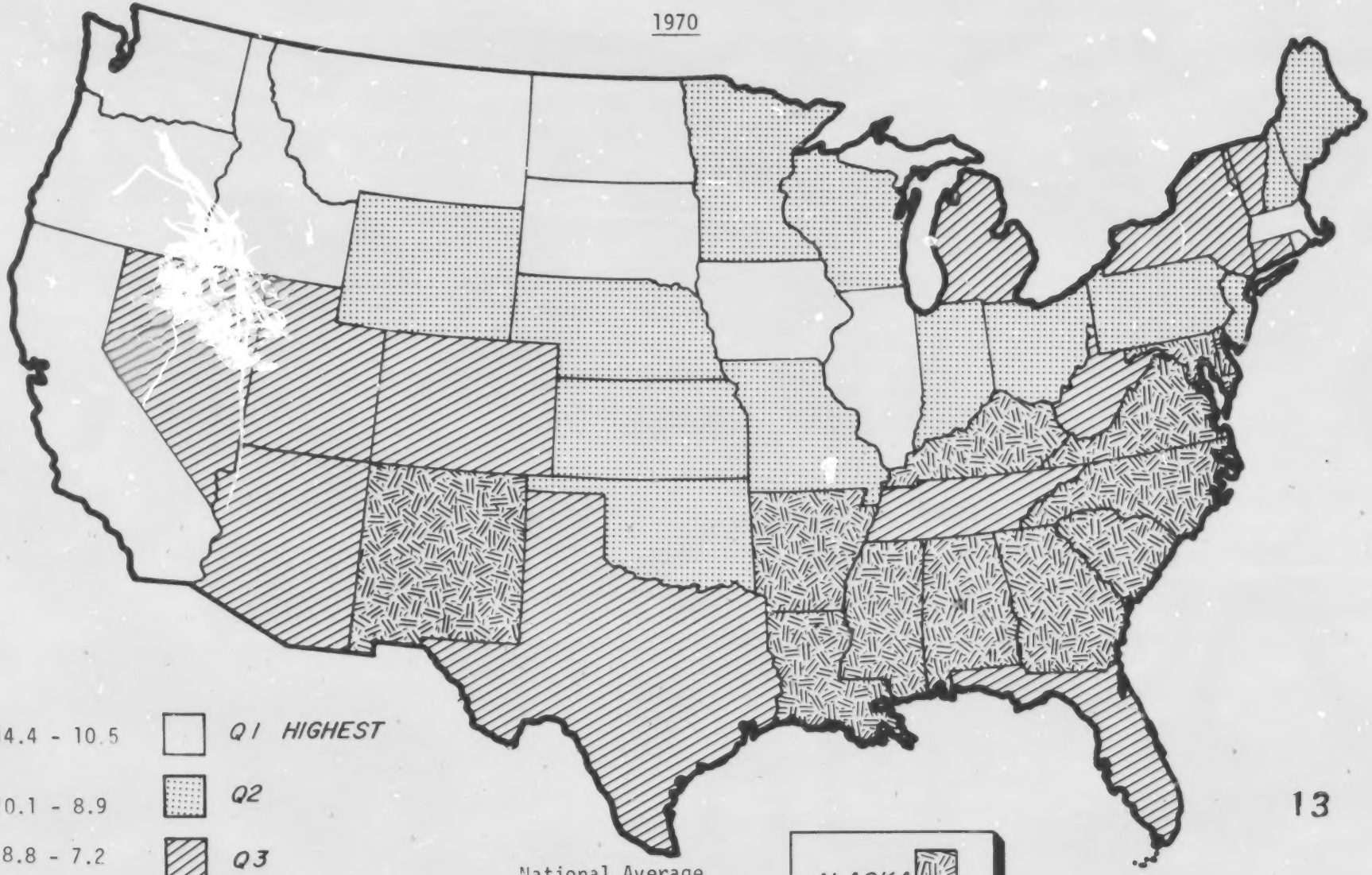


TABLE 1. ACTIVE OPTOMETRISTS IN THE SREB STATES - 1973

SREB STATES	OD's/100,000	NATIONAL RANK
Alabama	4.3	50
Arkansas	7.9	35
Florida	7.8	36
Georgia	5.5	46
Kentucky	6.6	39
Louisiana	5.8	45
Maryland	5.1	48
Mississippi	5.1	47
North Carolina	6.0	43
South Carolina	5.9	44
Tennessee	7.6	37
Texas	6.5	40
Virginia	6.1	42
West Virginia	7.3	38

National Average Ratio = 9.1 Optometrists/100,000 Population

such areas designated in the entire United States, and 72 percent (578) of these are in the 14 SREB states. Optometrists practice in 64 percent of all the counties in SREB states, although more than half of these counties have fewer than the "critical shortage" ratio (6.7/100,000) of optometrists. Optometrists are widely spread within the states, but they are thinly spread in each SREB state. (See Appendix A). There appears to be justification for concern about optometric manpower and demonstrated need for additional optometrists in the SREB states.

4. National Health Insurance

It is reasonable to assume that some form of national health insurance will be enacted in the not too distant future. Whether or not optometric services will be included in such a program is yet to be decided at the time of this writing. If it is, experience with Medicare and Medicaid indicates that a substantial increase in manpower will be required. In a recent study (1974) done under contract by Robert R. Nathan Associates for the Health Resources Administration, DHEW, entitled "The Impact of Archetypal National Health Insurance Plans on U.S. Health Manpower Requirements," it was shown that the increase in optometric manpower required for a wide variety of options was the largest of all professional categories. These increases were projected from the present national average and indicate that a severe shortage of optometrists may exist in SREB states if such a program is enacted by the Congress.

5. Implication for Additional Manpower

If it is assumed that a reasonable goal is to provide optometrists

at least at the level of the national average (9.1/100,000), there is a deficit of 1,697 optometrists in the SREB states, or a current need for 46 percent more optometrists to meet this goal.

The American Optometric Association, after studying practice utilization and public demand under proposed national health insurance, has recommended 14.3 optometrists per 100,000 population. To meet this higher ratio would increase the need to 126 percent, or 4,862 additional optometrists needed to achieve the "critical shortage," the national average, and the American Optometric Association ratio for each state as shown in Table 2. The table points out that 10 states need a total of 389 optometrists just to meet the critical shortage ratio. The percentage of optometrists needed to meet the national average (9.1/100,000 population) range from a 15 percent increase in Arkansas to a 112 percent increase in Alabama. The ratio of optometrists to population and current deficit for each state are shown in Figure 2.

B. Use of Professional and Paraprofessional Manpower other than Optometrists.

1. Professionals

Both ophthalmologists and optometrists perform vision examinations and prescribe lenses; however, there exist some basic differences between the disciplines. Ophthalmology has special concerns for eye health, eye pathology and ocular surgery. In addition, physicians other than ophthalmologists treat minor eye disease, and other professionals provide services that relate to vision problems, e.g., psychiatrists, psychologists, special educators, and neurologists.

Conditions which require surgical and/or medical treatment of the

Table 2. Active Optometrists and Present Deficit as Compared to Various Target Ratios. SREB States - 1973

	Present Active Optometrists 1973	Deficit of Optometrists, 1973, to Reach: DHEW Critical Shortage Ratio[1]		National Average Ratio[2]		National Health Ins. Requirements (AOA) Ratio[3]	
		Deficit(#)	Need(%)	Deficit(#)	Need(%)	Deficit(#)	Need(%)
Alabama	151	84	56	168	112	351	232
Arkansas	157	--	--	23	15	125	80
Florida	566	--	--	95	17	472	83
Georgia	261	55	21	169	65	414	159
Kentucky	217	4	2	83	38	255	117
Louisiana	215	34	16	124	57	317	147
Maryland	205	67	33	164	80	375	183
Mississippi	115	37	32	91	79	209	181
North Carolina	312	37	12	162	52	434	139
South Carolina	157	22	14	86	55	224	143
Tennessee	310	--	--	57	18	266	86
Texas	760	20	3	300	40	905	119
Virginia	290	29	10	144	50	391	135
West Virginia	131	--	--	31	24	124	94
SREB Total	3847	389	10%	1697	44%	4862	126%

(1) 6.7/100,000 (2) 9.1/100,000 (3) 14.3/100,000

Figure 2.

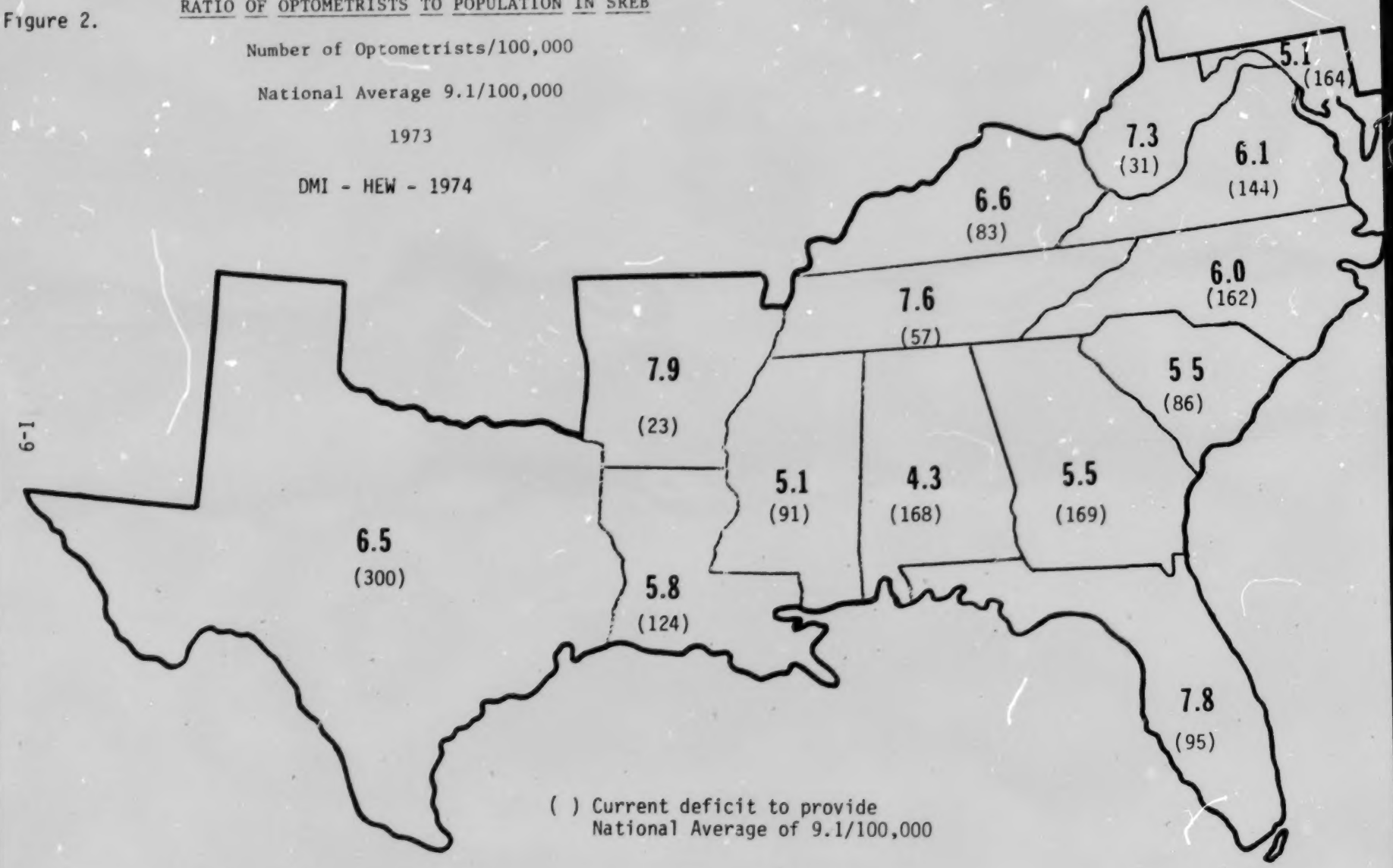
RATIO OF OPTOMETRISTS TO POPULATION IN SREB

Number of Optometrists/100,000

National Average 9.1/100,000

1973

DMI - HEW - 1974



( ) Current deficit to provide
National Average of 9.1/100,000

6-I

eyes account for approximately seven percent of all vision problems. The employment of such relatively expensively trained personnel as ophthalmologists for services to patients who do not require medical or surgical treatment is uneconomical. Further, because surgical treatment by ophthalmologists requires hospitals and special surgical equipment, they are much more likely to practice in urban centers. (See Appendix A.)

Ophthalmologists, too, are in short supply in the SREB region (Figure 3). Only two states have sufficient opthalmologists to equal the national average of 2.5 Board Certified ophthalmologists/100,000 (Florida 2.6/100,000; Maryland 2.5/100,000). One way of looking at this problem of relative need is to compare the ratio of optometrists and ophthalmologists in each state to the national average ratio for that profession. This ratio of ratios (ratio of optometrists divided by 9.1, the ratio of ophthalmologists divided by 2.5) is shown in Table 3. If a state has professionals equal to the national average the R/R equals 1.0, if more than the national average the R/R is greater than 1.0, if less that the national average the R/R is less than 1.0. All SREB states are thus shown to have a relative shortage of ophthalmologists. That a larger number of one profession does not result in fewer of the other is shown by a comparison of these derived ratios. This has been shown to be true for the nation as a whole by Hayes and Randall (Arch. Ophthalmol., Vol. 92, Nov., 1974). Both the distribution and the numbers of ophthalmologists in each state argues strongly against this alternative as a viable substitute for optometric manpower.

The optimal solution is to continue to develop and expand cooperative

Table 3. Relative Need for Optometrists and Ophthalmologists - 1973

	Active Optometrists		Board Certified Ophthalmologists	
	Ratio	Ratio/9.1	Ratio	Ratio/2.5
Alabama	4.3	0.47	1.1	0.44
Arkansas	7.9	0.87	1.0	0.40
Florida	7.8	0.86	2.6	1.04
Georgia	5.5	0.60	1.6	0.64
Kentucky	6.6	0.73	1.6	0.64
Louisiana	5.8	0.64	1.9	0.76
Maryland	5.1	0.56	2.5	1.00
Mississippi	5.1	0.56	1.2	0.48
North Carolina	6.0	0.66	1.6	0.64
South Carolina	5.9	0.65	1.2	0.48
Tennessee	7.6	0.84	1.9	0.76
Texas	6.5	0.71	2.2	0.88
Virginia	6.1	0.67	1.7	0.68
West Virginia	7.3	0.80	1.5	0.60

National Average: Optometrists 9.1/100,000

Board Certified Ophthalmologists 2.5/100,000

working relationships between optometrists and ophthalmologists and achieve a rational division of services to provide the fullest utilization of both professions. Efforts toward mutual cooperation and understanding are gradually developing. For example, the liaison committee for optometry of the Association for Academic Health Centers regarding the relations between optometry and ophthalmology in 1973 developed eight recommendations, with consultants from both optometry and ophthalmology, stressing increased cooperation between the professions toward quality health care delivery. (See Appendix B).

2. Paraprofessionals

Paraprofessionals who assist optometrists may be divided into four groups: optometric technicians, optometric assistants, office assistants, and opticians.

a. Optometric technicians are specifically trained to assist the optometrist in his professional service functions and extend his capabilities for such service. Each of the three schools of optometry in the SREB region provide optometric technician programs requiring two years of collegiate preparation. Miami-Dade Community College offers a similar program. These programs are all relatively new and there are few of these trained technicians in the work force at the present time.

b. Most optometrists have on-the-job trained optometric assistants who provide a variety of supporting services which do not require the training of a technician. A few institutions have started programs for such students of one year duration, with support from the U.S. Department of Labor.

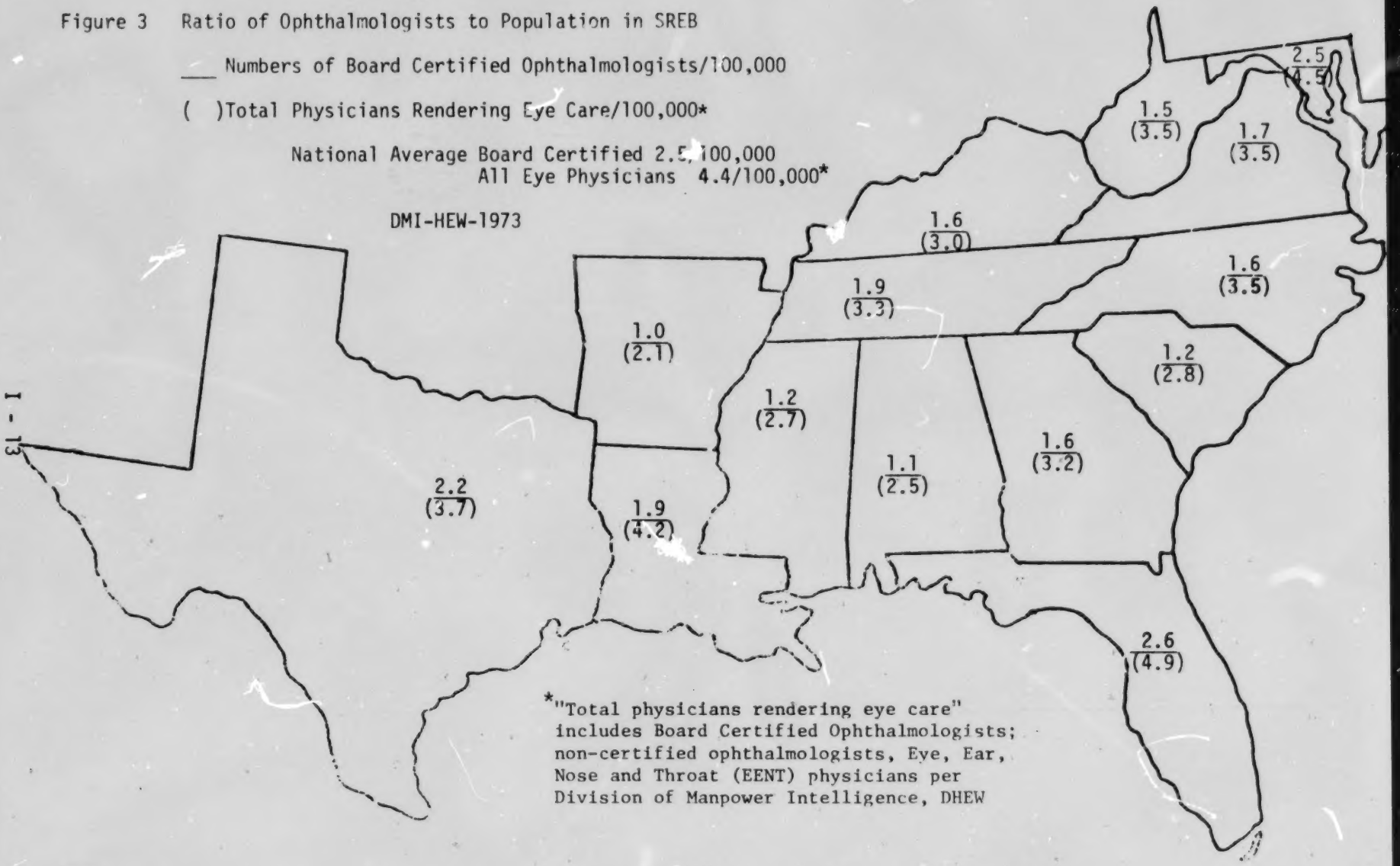
Figure 3 Ratio of Ophthalmologists to Population in SREB

___ Numbers of Board Certified Ophthalmologists/100,000

( )Total Physicians Rendering Eye Care/100,000*

National Average Board Certified 2.5/100,000
All Eye Physicians 4.4/100,000*

DMI-HEW-1973



*"Total physicians rendering eye care" includes Board Certified Ophthalmologists; non-certified ophthalmologists, Eye, Ear, Nose and Throat (EENT) physicians per Division of Manpower Intelligence, DHEW

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c. Office assistants perform the usual functions of office management, appointment keeping, bookkeeping, etc. Most of these individuals are drawn from the regular work force.

Opticians provide specific technical services in fabricating, servicing and preparing lenses, frames, contact lenses and special optical aids upon prescription. Members of these groups have varying degrees of education and the surveillance of their work and their registration as opticians varies from state to state.

The training and use of optometric paraprofessional personnel represents another means for expanding the service capabilities of optometrists.

C. Changes in Optometric Practice That May Affect Optometric Manpower Needs

1. Organization of the Delivery Service

There is a recent trend, particularly in our urban centers, toward the institutionalization of health services delivery, evidenced by the development of community health centers and ambulatory services related to hospitals. Optometry, along with other medical professions, is becoming more and more a practice in which the individual optometrist acts as a member of a cooperating group in the form of group practice, a health maintenance organization, or a community health center. Such organizations appear to provide a more efficient delivery of health services.

Although group practices are on the increase, solo practice and limited partnership forms will probably remain typical and popular forms of practice. This may be partially attributable to the fact that optometrists are widely distributed in rural areas where

institutional care is less likely to develop.

2. Changes in Office Management

The incorporation of optometric technicians into the practice of optometry should reduce manpower requirements. Studies have shown that an optometrist with a trained optometric technician can provide services for approximately 20 to 25 percent more patients per day than the optometrist working alone, without any diminution of quality.

3. Development of Technology

Changing technology continues to affect the service capability of optometrists. The utilization of new technology will require some retraining of optometrists and involve considerable capital outlay. The recent development of automatic refractometers and visual field plotting devices may expand the service capabilities of optometrists. On the other hand, increased technical capability can not only expand services to patients but improve the quality and quantity of service by providing both additional diagnostic techniques and new treatment modalities. For example, visually evoked response techniques (VER), a new method, make it possible to measure visual functions on non-communicative patients; soft contact lenses, a relatively new treatment technology, make it possible to treat vision problems not treatable with previously available contact lenses. Both of these technological advances require additional manpower. It does not seem likely that the net effect of technological developments will be to lessen the need for optometric manpower.

D. Factors Likely to Affect Demand for Optometrists

1. Economic Factors

Much of optometric service is paid for on a fee-for-service basis paid by the consumer and is therefore sensitive to the general level of the economy. However, pre-paid insurance plans and third-party payment for such services is increasing. The federal government has assumed a share of this financial responsibility, e.g., Medicare, Medicaid, CHAMPUS, EPSDT. Vision care is increasingly included in these plans. It appears that the United States and its citizens are willing to pay for better eye care, as they have for all health services.

In the opinion of many authorities, however, the economic ability of the United States to pay for better health services may shortly reach a plateau. Health planners, concerned with rising costs, may view optometrists as an important resource for vision services since the net-real-cost for optometric care may be somewhat less than for similar services from physicians with higher levels of training than that required for non-surgical purposes. This would create an increased demand for optometric services.

It is generally assumed that health insurance coverage by the federal government, in any form of national health insurance (NHI), will include fees for vision care by optometrists. Most of the major NHI bills in the Congress have included such vision services in their projected coverage. Such national entitlement would have an additional impact upon the demand/supply relationship, particularly because of the current shortage of optometrists in the South.

Health insurance by unions in major urban areas traditionally

includes coverage for optometric services and, although the extent of such coverage may vary from city to city, there has been a constant trend toward increasing both the number of persons and the extent of services included. It is assumed that this trend will continue.

2. Priority of Vision Care

Vision care, as part of better health care, has always carried a high priority in the demands of the public. Vision problems are the second most prevalent chronic health problems in the population (after dental caries) and increase with age to the point where, at age 60, almost 100 percent of the population requires vision care according to national health surveys. As the average age of the population continues to increase, through greater longevity and declining birthrates, the need for vision services will probably increase. Medicaid experience indicates that public financing of optometric services has a high priority and rapidly translates need into demand for service.

3. Access to Vision Care Services

Access to primary vision care services is to a large extent determined by the geographic distribution of practitioners. While there is a shortage of optometrists in the SREB states, the active optometrists are widely distributed within these states. Of the 1,342 counties and independent cities in the SREB states 863 (64 percent) contain active optometrists, while 252 (19 percent) contain Board Certified ophthalmologists (see Table 4 and Appendix A). Therefore, optometrists serve an important role as initial contact practitioners, providing needed vision care services and

Table 4. Distribution of Optometrists and Ophthalmologists Services in Counties

	Total Counties	Counties with Active ODs	%	Counties with Bd. Cert. Ophth.	%
Alabama	67	43	64	13	19
Arkansas	75	52	69	9	12
Florida	67	50	75	26	39
Georgia	159	82	52	18	11
Kentucky	119	75	63	13	11
Louisiana	64	49	77	14	22
Maryland	24	21	88	9	38
Mississippi	82	48	59	16	20
North Carolina	100	73	73	25	25
South Carolina	46	42	91	10	22
Tennessee	95	70	74	17	18
Texas	254	148	58	43	13
Virginia (incl. Ind. Cty)	134	72	54	30	22
West Virginia	56	38	68	9	16
TOTAL	1,342	863	64	252	19

early detection and referral of both general health problems affecting the eyes and ocular disease requiring the services of an ophthalmologist.

4. Age, Race, and Sex Distribution of Active Optometrists

The average age of presently practicing optometrists is older than the average age of the total labor force, with 56 percent of the optometrists in SREB states 45 years of age or older. Consequently, more than half of the present optometrists can be expected to retire within the next 20 years (see Figure 4 and Table 5 and 6). This adds to the urgency for action in developing educational opportunities for optometrists.

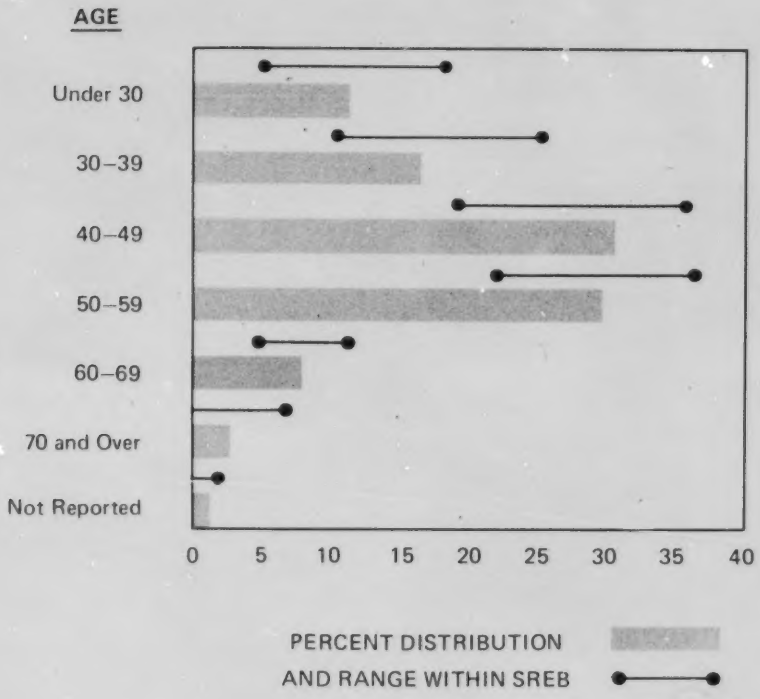
In the United States there were approximately 600 black and other minority optometrists in 1970, or 3.2 percent of the total active optometrists. Also there were 380 female optometrists in the United States in 1970, or 2.1 percent of the total active optometrists (see SREB report Manpower and Educational Needs in Selected Professional Fields: Optometry, 1973).

5. Opportunities for Women and Minorities

a. Women

Women made up 3.9 percent of the total optometry student population in 1971-72 and 6 percent of the entering class that year. As previously stated they made up 2.1 percent of the total active optometrists in 1970. There is a definite increase in the proportion of women in the optometry student population. Women are taking advantage of opportunities in optometry schools. More agressive counseling of high school and college women should lead more of them to choose this field.

Figure 4 AGE DISTRIBUTION OF ACTIVE OPTOMETRISTS– 1973



SOURCE: Division of Manpower Intelligence, DHEW, 1973

	ALABAMA	ARKANSAS	FLORIDA	GEORGIA	KENTUCKY	LOUISIANA	MARYLAND	MISSISSIPPI	NORTH CAROLINA	SOUTH CAROLINA	TENNESSEE	TEXAS	VIRGINIA	WEST VIRGINIA	TOTAL
UNDER 30	7.3	11.5	17.8	9.2	9.7	10.2	14.6	11.3	7.4	10.2	11.0	10.3	11.4	4.6	11.2
30-39	14.6	25.5	21.2	16.5	12.0	10.2	16.6	13.0	17.9	14.6	16.5	15.3	17.2	13.7	16.5
40-49	31.8	19.1	31.1	31.4	33.2	32.1	31.7	32.2	34.0	34.4	32.6	25.8	33.4	35.9	30.7
50-59	37.1	29.9	21.2	29.5	31.3	34.0	26.8	36.5	26.3	33.1	26.5	35.3	29.0	29.0	29.7
60-69	7.3	5.7	5.8	9.6	7.4	8.4	6.8	4.3	9.3	5.1	9.0	9.1	5.5	11.5	7.7
70 & OVER	0.0	7.0	1.6	2.3	5.1	3.7	2.4	2.6	2.9	1.3	3.5	3.0	2.1	3.8	2.8
NOT REPORTED	2.0	1.3	1.2	1.5	1.4	1.4	1.0	0.0	2.2	1.3	1.0	1.3	1.4	1.5	1.4
MEAN AGE	47.3	46.4	43.0	47.1	48.0	48.2	45.2	46.7	47.1	46.2	46.7	47.7	45.6	44.1	46.5

Table 5

AGE DISTRIBUTION OF ACTIVE OPTOMETRISTS
BY PERCENTAGE AND MEAN AGE
BY STATE - 1973

SOURCE: DIVISION OF MANPOWER INTELLIGENCE, DHEW, 1973

	ALABAMA	ARKANSAS	FLORIDA	GEORGIA	KENTUCKY	LOUISIANA	MARYLAND	MISSISSIPPI	NORTH CAROLINA	SOUTH CAROLINA	TENNESSEE	TEXAS	VIRGINIA	WEST VIRGINIA	TOTAL
UNDER 30	11	18	101	24	21	22	30	13	23	16	34	78	33	6	430
30-39	22	40	120	43	26	22	34	15	56	23	51	116	50	18	636
40-49	48	30	176	82	72	69	65	37	106	54	101	196	97	47	1180
50-59	56	47	120	77	68	73	55	42	82	52	82	268	84	38	1144
60-69	11	9	33	25	16	18	14	5	29	8	28	69	16	15	296
70 & OVER	0	11	9	6	11	8	5	3	9	2	11	23	6	5	109
NOT REPORTED	3	2	7	4	3	3	2	0	7	2	3	10	4	2	52
TOTAL	151	157	566	261	217	215	205	115	312	157	310	760	290	131	3847
MEAN AGE	47.3	46.4	43.0	47.1	48.0	48.2	45.2	46.7	47.1	46.2	46.7	47.7	45.6	49.1	46.5

Table 6 AGE DISTRIBUTION OF ACTIVE OPTOMETRISTS
BY STATE - 1973

SOURCE: DIVISION OF MANPOWER INTELLIGENCE, DHEW, 1973

b. Minorities

There has been a major effort on the part of the federal government and educational institutions to bring more minority group students into health professional education and careers. The American Optometric Association and the National Optometric Association, with federal grant support, have supported a minority recruitment program since 1971.

In 1971-72 the total number of minority students had increased to 200 or 6.5 percent of the total student body. This compares favorably with the fact that in 1970 3.2 percent of the total active optometrists were of minority race.

The present location of many optometry schools in major urban centers has made the schools more aware of the needs of minority groups and committed to the recruitment of qualified minority students. A Minority Recruitment Seminar sponsored by the American Optometric Association suggested that recruitment efforts, concentrating on youth in urban centers, where minority youth are more exposed to experience with health professionals and are more likely to attend college, would be a good means for bringing about further increases in number and percentage of minorities in the profession.

6. Effects of Changes in Other Vision-Related Personnel

a. Ophthalmologists

It is unlikely, at the present time, that there will be a large net increase in the number of ophthalmology residencies, either by expanding present programs or developing new ones. Many departments of ophthalmology are at about their maximum level.

A few are reducing the number of first-year residency places because of factors such as financial restraints at the federal, state, and hospital level. The likelihood of a significant increase in the number of ophthalmologists is relatively limited in the coming years.

b. Paraoptometric Personnel

Optometric technician and optometric assistant educational programs are relatively new, and they have graduated few students. These programs hold promise of partially reducing the need for additional optometrists. For maximum effectiveness, optometric technician education should be offered in linkage with schools of optometry. Each of the present schools of optometry in the SREB region has a successful optometric technician program. A number of community colleges also have successful optometric technician programs. These institutions are most flexible in increasing and decreasing the size of their program enrollments in response to the changing needs of society. It is considered essential that community colleges developing optometric technician programs develop these programs with the cooperation of adjunct faculty from schools of optometry in curriculum planning, didactic and clinical program development, and planning for utilization. Active practicing optometrists must be educated in the proper utilization of optometric technicians for maximum effectiveness and such continuing education should be considered as part of the program.

CHAPTER II

II. Current and Projected Supply of Optometrists

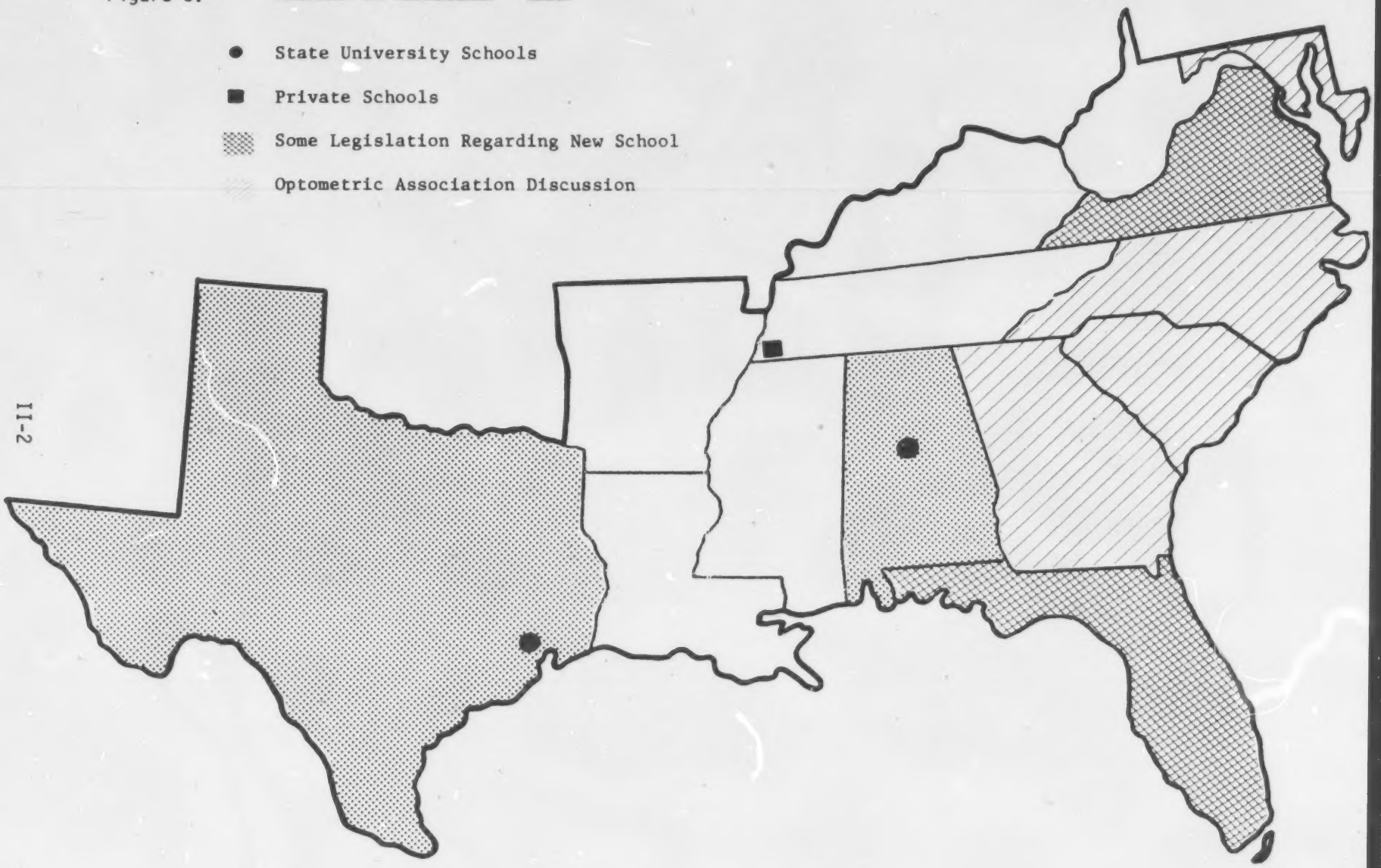
A. Existing Schools

1. Locations and Affiliations

There are currently 12 schools of optometry (three of which are located in the SREB region--see Figure 5) operating in the United States: Pacific University at Forest Grove, Oregon; University of California at Berkeley, California; Southern California College of Optometry at Fullerton, California; University of Houston at Houston, Texas; Illinois College of Optometry at Chicago, Illinois; Indiana University at Bloomington, Indiana; The Ohio State University at Columbus, Ohio; Southern College of Optometry at Memphis, Tennessee; University of Alabama in Birmingham, Alabama; Massachusetts College of Optometry at Boston, Massachusetts; The State University of New York in Manhattan, New York; Pennsylvania College of Optometry at Philadelphia, Pennsylvania. All of these institutions offer a four-year professional program, based on a minimum of two years of preprofessional prescribed collegiate study, leading to a Doctor of Optometry (O.D.) degree. Most students admitted to optometry schools today have baccalaureate degrees in related fields.

In addition, in 1974, legislatures have authorized the development of three new schools of optometry: in Florida, Missouri and Michigan. The Virginia legislature has authorized a study of the need for a school of optometry in that state.

Figure 5. SCHOOLS OF OPTOMETRY - 1974



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Of the existing schools of optometry, seven are in universities, five are free-standing non-profit institutions with various ties to local universities. Six of the 12 are in state-supported institutions. During recent years all have received substantial support from the federal government in grants and contracts for operating, program development, research and construction funds. The three new schools under development will all be in state-supported institutions.

2. Enrollments

There are three schools of optometry in the SREB region, at Houston, Memphis, and Birmingham. In 1973, Houston admitted 72, Southern College admitted 150 and Alabama admitted 25 students. Alabama will increase the size of its entering class to 40 in 1975. Houston will increase the size of its entering class to 100 in 1977, but Southern College of Optometry expects to reduce the size of its entering class, in steps, to 75 by 1980. Thus, educational opportunities for optometry students will actually decline from 227 in 1974 to 215 in 1980 if all present plans for existing schools are carried out. The development of a new school in Florida will add an estimated 60 places by 1980, however, and thus we can reasonably expect the total entering places for optometry students to be 275 by 1980.

It is important to note that there are many more qualified students applying for admission to optometry schools than can be admitted. In 1973 there were between six and eight qualified applicants for each available space in the schools of optometry,

after eliminating the multiple applications. More than seven thousand students took the Optometric College Admissions Test, and there are less than one thousand places available for entering students in all the schools of optometry. If the educational resources were available there are sufficient qualified students to provide the optometric manpower to supply the services needed by the public.

3. Contract Places

Each of our states supports optometric education, either directly as in Texas and Alabama where there are schools of optometry in state supported universities, or through contracts for optometry students, such as through the mechanisms and under the sponsorship of the SREB. Other regional education compacts, and individual states, in other parts of the country have started to develop programs similar to the SREB model of support for optometric education.

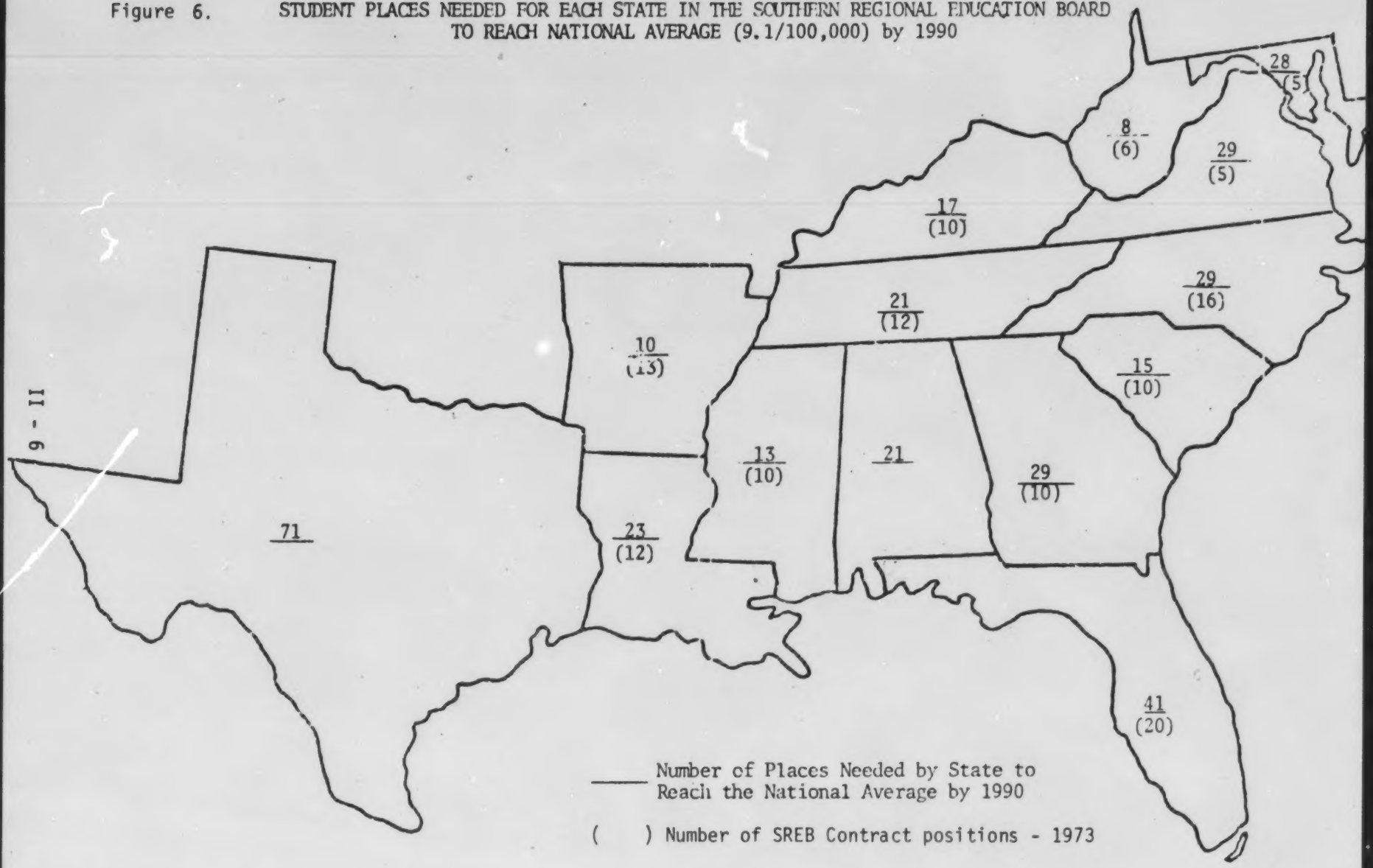
In 1973, there were 129 contract places supported by SREB states that do not have optometry schools. These were distributed among Southern College of Optometry, 106; University of Alabama in Birmingham, 10; and University of Houston, 13. The needs of Texas will absorb almost all the graduates of Houston and that school will likely increase the number and percentage of in-state students. Alabama, increasing its entering class size to 40 students in 1975, commits 25 of its entering places to Alabama residents providing 15 places for SREB contracts. Southern College of Optometry is not expected to increase the number of its contracts with SREB states because of its commitments to other states and may decrease its entering class size from 150 to 75 by 1980, according to its Board of Trustees. There are an inadequate number of first-year places in existing optometry schools to accommodate the states'

Table 7. Additional Number of Optometry Student Places Required per year 1973-1990 to Achieve National Average by 1990*

	Total Number of Student Places Needed Per Year 1973-1990	SREB Contracts: Optometry 1973	Additional Student Places Needed Per Year 1973-1990
Alabama	21	State School	-
Arkansas	10	13	(3)
Florida	41	20	21
Georgia	29	10	19
Kentucky	17	10	7
Louisiana	23	12	11
Maryland	28	5	23
Mississippi	13	10	3
North Carolina	29	16	13
South Carolina	15	10	5
Tennessee	21	12	9
Texas	71	State School	-
Virginia	29	5	24
West Virginia	8	6	2
TOTAL SREB	355	129	134

* Considering: deatn, disability and retirement of present active optometrists, changes in population, attrition of students. National average = 9.1/100,000

Figure 6. STUDENT PLACES NEEDED FOR EACH STATE IN THE SOUTHERN REGIONAL EDUCATION BOARD TO REACH NATIONAL AVERAGE (9.1/100,000) by 1990



II - 6

requests for contract places for 1975.

Calculation of the number of students per year required for each state to provide the national ratio (9.1/100,000) by 1990 indicates a need for a total of 355 students entering optometry school each year in the SREB region--each year, starting in 1973, through 1990. (See Table 7 and Figure 6). There is an annual deficit of 134 places now. In 1980 there will be an annual deficit of 155 places, if Florida and Southern College of Optometry implement their current plans and if no new institutions are created.

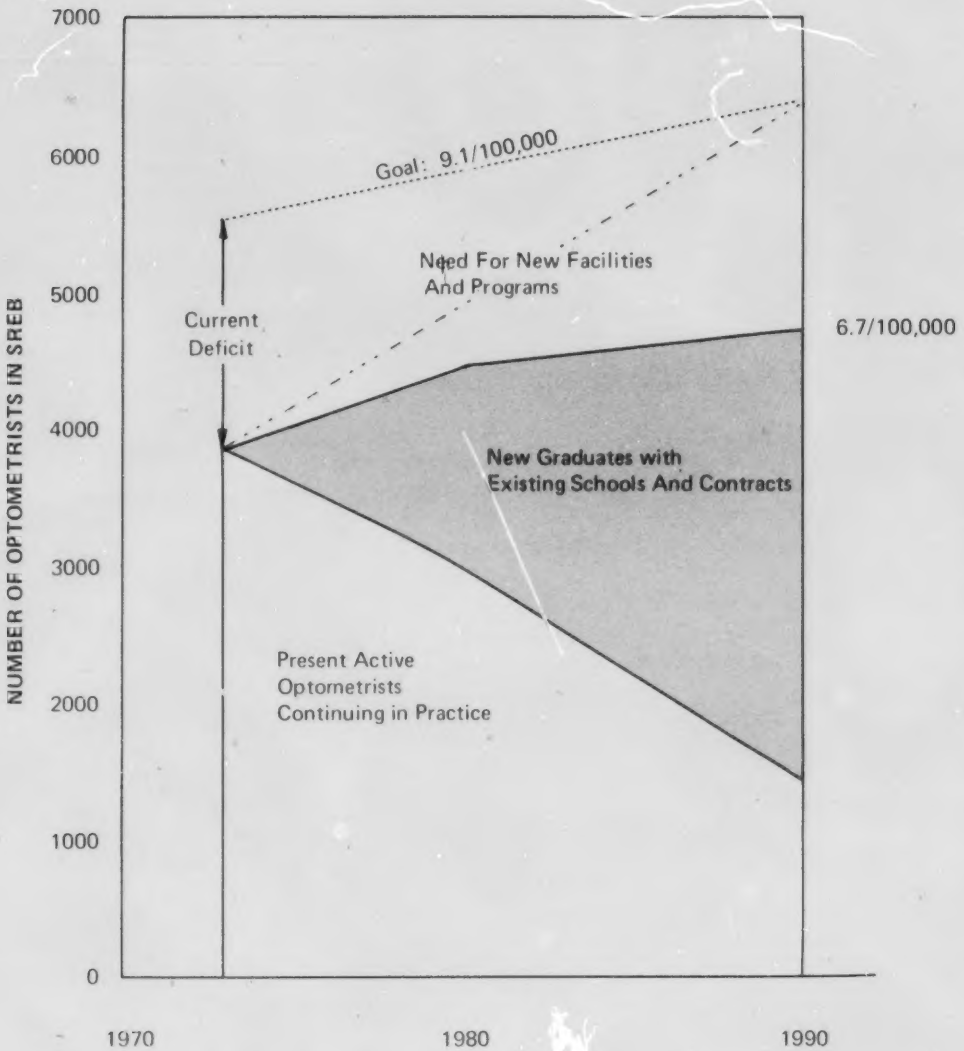
The need therefore is for two additional schools of optometry each admitting 60 students per year; and if, Southern College of Optometry reduces the size of its entering class from 150 to 75, a third additional school will be necessary to provide the optometric manpower required in the SREB (See Figure 7).

4. Continuing Education

Optometric educational requirements have increased approximately one year in each decade for the past half-century. There are optometrists practicing today whose collegiate and professional education level totaled three or four years before qualifying for licensure; the present graduate averages eight years of college and professional education. Therefore, quality clinically-oriented continuing education should be available to all active optometrists, both to enhance the qualifications of the older optometrists and to provide continuing education for all optometrists. Continuing education is a requirement for relicensing in optometry in half the states in the United States. Organized continuing education for practicing optometrists is a high priority function of the present schools of optometry. New schools of

Figure 7. OPTOMETRIC MANPOWER PROJECTIONS

1973-1990



optometry, equally commited to continuing education, would make such programs more accessible. Through this means the latest advances in knowledge, clinical skills, techniques and instrumentation can be make widely available to the public.

CHAPTER III

III. Development of Optometric Education

A. Changing Educational Practices

1. Professional School at Graduate Level

Optometric education, at the present time, incorporates a four-year professional education program which follows an appropriate term of pre-professional education. This pre-professional education varies from a minimum of two years of college education in selected subjects to a few students who have their master's or an occasional student with a doctoral degree. The majority of students enter optometry school following completion of their baccalaureate degree.

2. Broad Health Background

In recent years, the schools of optometry have been engaged in a long-term transition. Not only has optometric education increased approximately one year for each decade in this century, but it has changed from a physics orientation to a broad health-sciences educational background.

As a primary health professional, the optometrist now receives a health-science education. Concurrently, the optometrist's scope of practice has expanded to more sophisticated recognition of eye disease and ocular manifestation of systemic disease, the diagnosis and treatment through lenses or vision training of defects of binocular vision, contact lens fitting,

low-vision therapy, vision rehabilitation and development of vision performance.

3. Changing Curriculum

A major transition that continues in progress at the optometry colleges is a substantial strengthening of the bio-medical sciences. The newer programs include pertinent anatomy, histology, physiology, biochemistry, microbiology, pathology and pharmacology. In this respect, then, the colleges of optometry more closely resemble colleges of dentistry. Thus, even though a specific organ concentration for professional practice is recognized, it is also agreed that it is essential that the biological sciences educational component be provided.

Most schools of optometry now incorporate the public health needs of the patient and the community into their educational and service teaching. Similarly, the sociology of health care, the social setting and the pyschological needs of the patient are included in the educational programs of the colleges of optometry.

4. Graduate Program

There is need for educators in the discipline of optometry and for basic and applied researchers in visual science and vision care. Optometry schools have recruited faculty from physics, physiological psychology and bioengineering in addition to the basic biological sciences. The scientific base of optometry

is physiological optics. Six of the 12 optometry schools in the nation offer graduate programs in physiological optics, four to the Ph.D. level, two to the M.S. level, and one has an M.S. and Ph.D. proposal under institutional review. The oldest continuously active Ph.D. level program in physiological optics has been in existence at Ohio State University since 1938. These programs should be closely coordinated with the other graduate programs of the university, particularly those in related biological and behavioral sciences.

5. Clinical Experience

Correlated with this increased amount of biomedical base information, there is also a simultaneous need for extensive clinical experience. This experience has traditionally emphasized the need for skills in the examination of the eye function, particularly its physical function and physiological optics, and this concentrated focus is appropriate. Nevertheless, it is necessary to recognize the broader health needs of the patient that may be identified during the eye examination, i.e., diabetes, hypertension, etc. Here again, this new focus is similar to developments that have occurred in the profession of dentistry. Dentistry as a profession provides one more source of identification of patient need and facility for referral, or one more point of entry to the health care system for a patient. The educational process of schools of optometry appears prepared to accept this responsibility and make it a portion of their

total curriculum. This can be best accomplished in conjunction with other health sciences schools.

6. Changing Identity

Simultaneously, the optometry profession itself has been strengthening its parameters of professional stature from that of an individual practitioner with technical skills to that of a professional member of the "health sciences team." Through significant efforts in continuing education, strengthening of ethical and professional modes of practice, and the assumption of community responsibility, the identity of the optometrist as a primary provider of health services with special responsibility for vision care is being strengthened.

B. Educational Setting

1. Traditional Setting

Historically, optometric education has been divided between free-standing, independent schools of optometry and programs originally attached to physics departments of universities, both with limited identification with, or cooperation from, other health sciences. The independent schools were largely privately supported while the university programs were publicly supported. Both modes have been in existence since the early part of this century. These "settings" have the consequence of further contributing to the isolation of optometry from the other health professions. Currently, this is undergoing general change and modification. One important factor in

accomplishing this change has been the strengthening of the accreditation standards for colleges of optometry and a second is the efforts of the leaders of optometric education to change the educational process and patterns to make it a broad-based education-research-patient care model, analogous to the educational setting of medicine and dentistry.

2. Health Sciences Setting

The consensus of many associated with optometric education is that in order to achieve the highest quality education for participation as a member of the "health sciences team," optometry colleges must become part of the health sciences educational scheme. As part of a health sciences team, it is necessary for the optometrist to speak the same "language." With this in mind, there needs to be appropriate basic sciences background for optometry students. Much can be accomplished by sharing in the educational process. The process may not integrate specifically with medicine; with modification, the education can be akin to that provided in the areas of dentistry and podiatry in the biological and physiological skills. The educational process that has been developed in dentistry in a university setting appears to be an appropriate model for optometric education.

It is also necessary to provide some psychological skills, a sociology background, an awareness of the social setting for

the practice of health care, and public health concepts. Much of this educational component can be efficiently accomplished in the university health sciences setting.

Significant cost savings may be affected by location of the school of optometry in an academic health sciences center. Sharing of existing biomedical laboratories and instructional resources would avoid costly duplication.

An important consideration, too, is the opportunity for interprofessional and interpersonal communication which, started on a student level, can lead to important associations for future health delivery systems.

3. Locational Setting

The optimal site for optometric education, particularly new schools of optometry, appears to be in an academic health sciences center. Ideally, this is on the health sciences campus which is within a general university, located in or relatively close to a large urban center. This position has been endorsed by the Association of Schools and Colleges of Optometry and, in principle, by the Association for Academic Health Centers.

Various modifications of the optimum provide a spectrum of moderately good alternatives to unacceptable alternatives. For example, a college of optometry can be an integral part of a major university, by being located a short distance

away, i.e., in an urban setting a few miles from the university campus. The important component is the interchange with other health sciences and university disciplines, in a significant rather than perfunctory manner.

Another, but less optimal, alternative is that within a major university setting in which the university has no health sciences component. This would weaken considerably the broader concept of optometry education for the future. If the locale is a major urban area, and there is access to substantive cooperative teaching efforts with a health sciences center, this model may serve satisfactorily.

Another, but even less optimal, alternative is a free-standing college of optometry in which significant affiliation is achieved with the health sciences center of a university and/or the major university. Affiliation per se does not provide the level of academic and fiscal support available in an integrated program. However, even this alternative is more educationally satisfactory than a free-standing college of optometry with no affiliation of any kind with a university.

While present schools, largely for historical reasons, exist in many of these different settings, there is general agreement that new schools should be developed in academic health centers of universities. Those schools not now in such settings should make efforts for such amalgamation or affiliation.

4. Instructional Setting

The exchange of faculty in the basic sciences, in public health and the social sciences is important in further enhancing and upgrading optometry education nationwide and developing the highest sense of professional capability that is possible in this particular field.

The academic health sciences center will provide the best setting for further development of graduate programs. This will provide college of optometry graduate students with greater access to educational resources and achieve an enhanced cooperative effort in the areas of research that are proposed, together with greater acceptance of their findings. These programs should be developed in conjunction with a principal university setting, with rigorous review by university graduate councils and investigations conducted in accordance with established university procedures.

5. Clinical Setting

The availability of clinical experience is essential for a good educational program. This again emphasizes the need for a major urban area as a setting for any college of optometry. There is a need for a reasonably large number of patients who manifest a sufficient sampling of all the clinical modalities that may be encountered by the student in his future professional life. Without this sufficiently large population

base of patients who are willing to come to a college of optometry's clinical setting for vision care it is difficult to maintain an acceptable educational program in optometry.

6. Opportunities

All SREB states, except West Virginia, have locations that meet the optimal conditions discussed above for the development of new schools of optometry, i.e., academic health centers in urban areas of 200,000 population or more. In the 12 SREB states that do not have schools of optometry there are 21 such locations. Two states, Alabama and Texas, have such schools. These are shown in Figure 8 and listed in Table 8.

It would not economically be feasible for every "potential institution" to develop a school of optometry, and unilateral action on the part of each state to develop an "in-state" school would produce considerably more optometrists than required. New schools of optometry are required, however, and the greatest benefits and most effective use of resources would be obtained if these were developed based on regional needs and on a regional basis. There are ample locations that present optimal opportunities within a variety of such regional plans.

Figure 8.

LOCATIONS FOR SCHOOLS OF OPTOMETRY

Academic Health Science Centers Located in Urban Areas
with Population of 200,000 or More

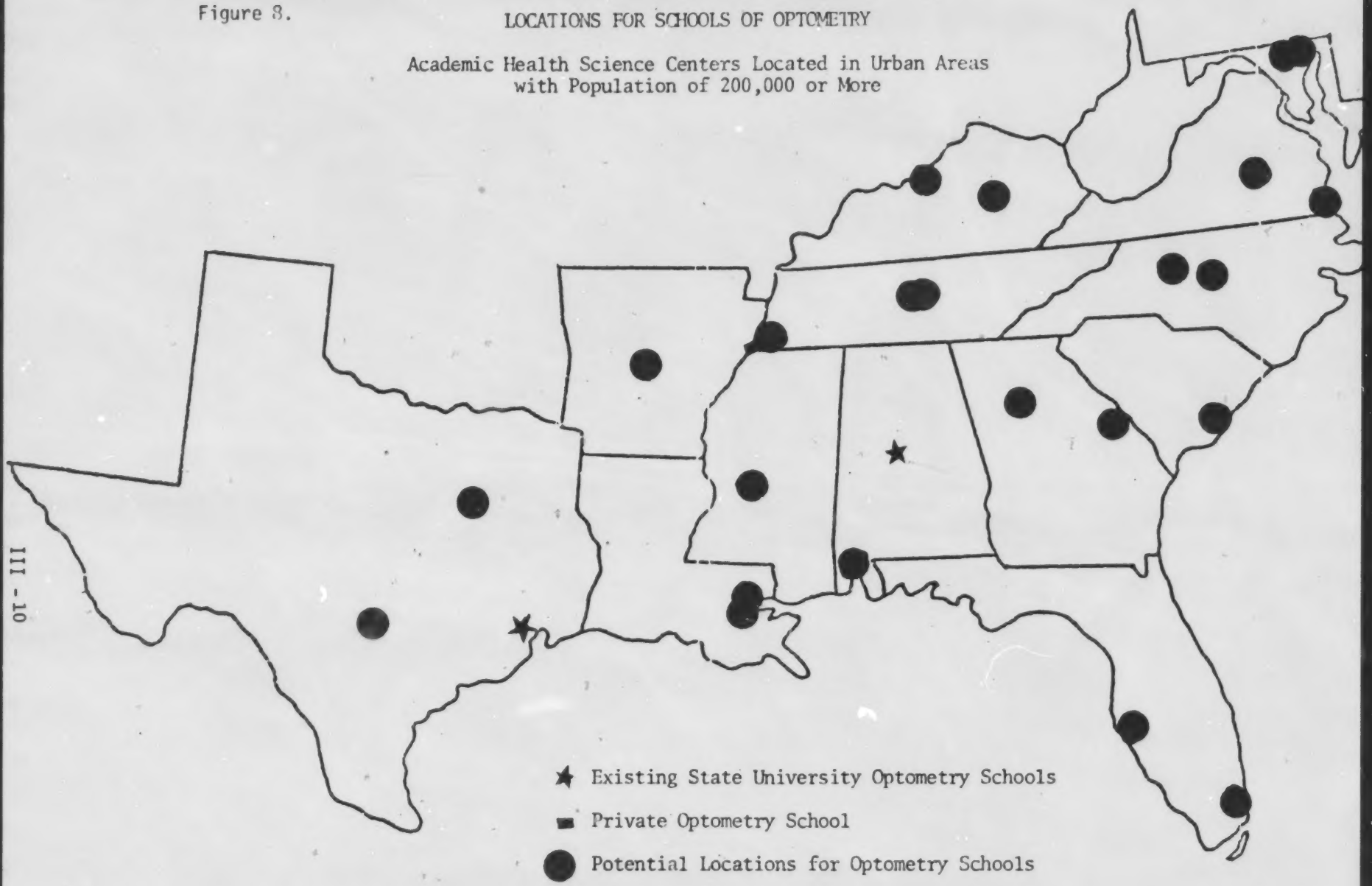


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TABLE 8. POTENTIAL LOCATIONS FOR NEW SCHOOLS OF OPTOMETRY

Academic Health Science Centers Located in
Urban Areas of 200,000 or More

State	Academic Health Science Center	Location
Alabama	University of South Alabama	Mobile
Arkansas	University of Arkansas	Little Rock
Florida	University of Miami	Miami
	University of South Florida	Tampa
Georgia	University of Georgia	Augusta
	Emory University	Atlanta
Kentucky	University of Louisville	Louisville
	University of Kentucky	Lexington
Louisiana	Tulane University	New Orleans
	Louisiana State University	New Orleans
Maryland	Johns Hopkins University	Baltimore
	University of Maryland	Baltimore
Mississippi	University of Mississippi	Jackson
North Carolina	Bowman Gray - Wake Forest College	Winston Salem
	Duke University	Durham
South Carolina	University of South Carolina	Charleston
Virginia	Virginia Commonwealth University	Richmond
	Old Dominion University/Eastern Virginia Medical School	Norfolk
Tennessee	Meharry Medical College	Nashville
	Vanderbilt University	Nashville
	University of Tennessee	Memphis
Texas	University of Texas	Dallas
	University of Texas	San Antonio

C. Costs of Optometric Education

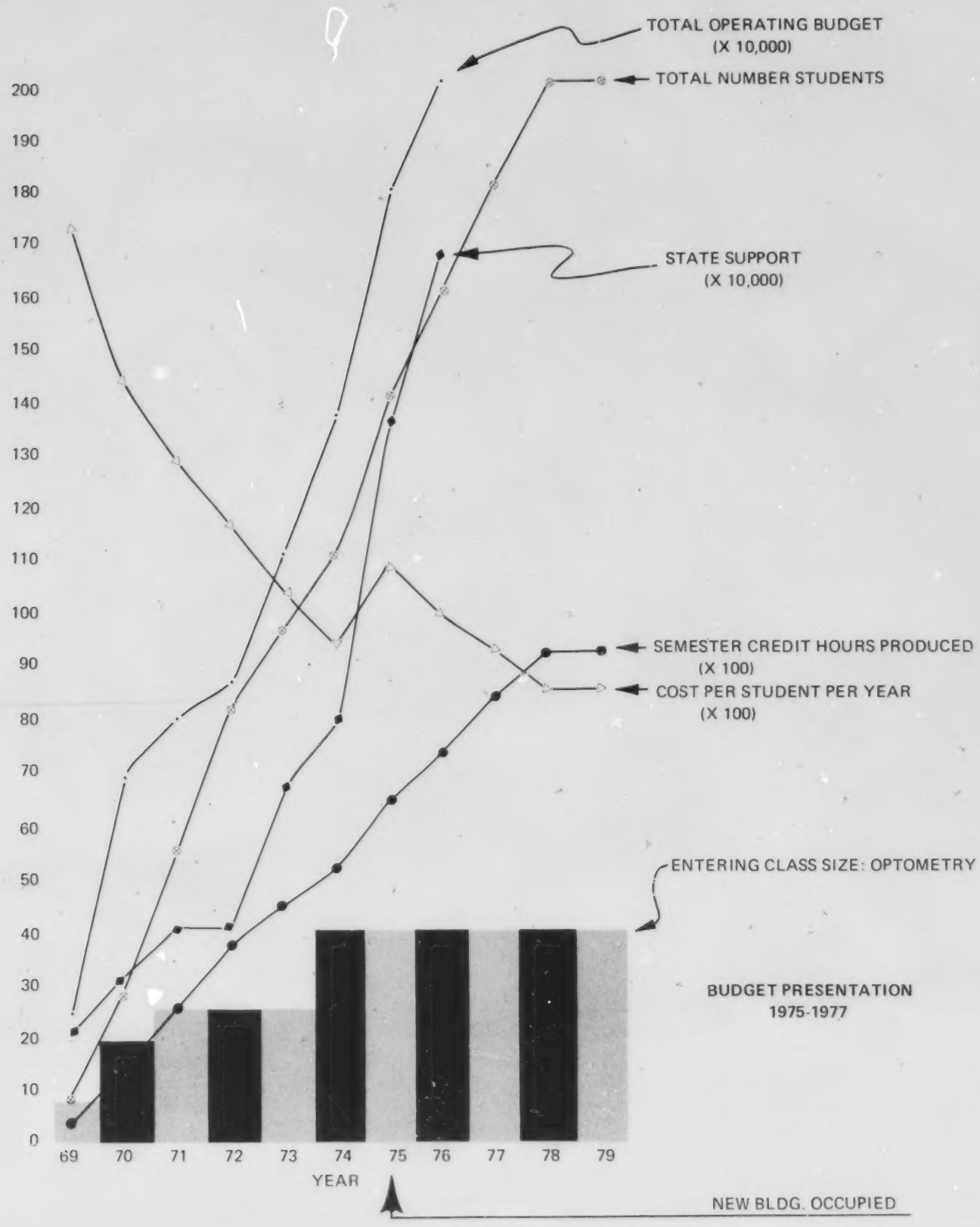
Projecting the costs of optometric education appears risky, at best, in these unsettled economic times. While optometric education is not as expensive as either medical education or dental education, considerable cost is involved. The extent of the cost is significantly affected by such factors as the utilization of already established health sciences programs and facilities, by total enrollment in the institution, by program enrollment, by faculty salary and by faculty load, as well as the cost allocation and budgeting procedures of the institution. The two major categories of cost, operating budget and capital budget, will be considered separately.

1. Operating Budget

It is estimated that the cost of an optometry program would be approximately $8,000 per student per year, based on 1974 dollars. Two assumptions were made in making this estimate. One is that the cost is for a developed program, that is, one that has reached its target enrollment, is reasonably equipped and staffed, and has accomplished its initial development. The second is that the school is located in an academic health center where it can share basic health science facilities and programs.

During the development stage the cost per student per year will be considerably higher, although the total operating budget will be lower than for the developed program. The

Figure 9



BUDGET PRESENTATION
1975-1977

SCHOOL OF OPTOMETRY / THE MEDICAL CENTER
UNIVERSITY OF ALABAMA IN BIRMINGHAM

INCOME	FY 67-68	FY 68-69	FY 69-70	FY 70-71
State Appropriation	50,000	50,000	200,000	300,000
Student Fees & Tuition			6,000	20,000
Interest & Other Misc.			2,000	2,000
Unrestricted Gifts				
Research Grants (Fed.)				
Research Grants (non-Fed.)				
Clinic Income				
Capitation Grant				26,462
Special Projects Grant				405,460
Optometric Technician Grant				
SREB Support				
Other Teaching Units			34,501	
Remodeling Allocation				121,173
	50,000	50,000	242,501	875,095
EXPENSES				
Teaching Personnel			71,500	257,559
Other Personnel			16,675	32,650
Employee Benefits			1,747	38,820
Equipment			68,432	202,395
Space Rental				
Remodeling & Alterations				189,394
Materials & Supplies (including clinic)			10,190	23,506
Travel			6,500	7,467
Communications Cost			4,500	7,624
Recruiting			7,493	4,188
Consulting			2,769	575
Transfer to Gen. Admin. Ser.			35,695	41,072
Transfer to Joint Depts.			17,000	55,000
Contingency				14,845
General Expense				
	50,000*	50,000*	875,095	861,562

*Planning funds allocated to President's office.

Table 9. a. Operating Budget
School of Optometry
University of Alabama in Birmingham

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	FY 71-72 Audited	FY 72-73 Audited	FY 73-74 Current	FY 74-75* Projected	FY 75-76* Projected	FY 76-77* Projected	FY 77-78* Projected	FY 78-79* Projected
INCOME								
State Appropriation	408,065	408,065	650,000	749,000	1,200,000	1,300,000	1,500,000	1,600,000
Student Fees & Tuition	41,400	74,100	99,000	117,000	189,000	216,000	216,000	216,000
Interest & Other Misc.	2,000	2,000	3,000	3,000	3,000	3,000	3,000	3,000
Unrestricted Gifts					5,000	5,000	5,000	5,000
Research Grants (Fed.)	25,577			40,000	80,000	80,000	90,000	90,000
Research Grants (non Fed.)					5,000	5,000	7,500	7,500
Clinic Income	20,000	30,000	60,000	75,000	100,000	125,000	125,000	125,000
Capitation Grant	36,242	30,675	52,500	84,000				
Special Projects Grant	239,995	279,211	297,536	305,399				
Optometric Technician Grant	88,283	54,980	47,512	49,684**	51,943**			
SREB Support				18,000	48,000	78,000	100,000	120,000
	861,562	879,031	1,209,548	1,441,083	1,681,943	1,812,000	2,046,500	2,166,500
EXPENSES								
Teaching Personnel	326,710	437,570	562,983	675,271	768,411	830,673	929,448	980,568
Other Personnel	52,156	83,468	142,404	150,263	176,528	191,437	213,966	225,734
Employee Benefits	45,718	67,735	91,700	148,549	170,004	183,890	205,836	217,198
Equipment	150,953	103,165		50,000	50,000	50,000	75,000	75,000
Space Rental								
Remodeling & Alterations	22,000	5,000						
Materials & Supplies (including clinic)	25,577	22,593	35,122	130,000	150,000	150,000	175,000	175,000
Travel	9,469	8,500	12,000	12,000	12,000	20,000	29,000	30,000
Communications Cost	10,000	11,000	12,000	12,000	12,000	18,000	20,000	22,500
Recruiting	7,000	5,000	5,000	5,000	5,000	5,000	5,250	7,500
Consulting	10,150	3,500	3,000	3,000	3,000	3,000	3,000	5,000
Transfer to Gen. Admin. Ser.	61,500	61,500	176,000	176,000	250,000	275,000	300,000	300,000
Transfer to Joint Depts.	70,000	70,000	79,000	79,000	85,000	85,000	90,000	90,000
Contingency	60,000		90,339					38,000
General Expense	10,329							
	861,562	879,031	1,209,548	1,441,083	1,681,943	1,812,000	2,046,500	2,166,500

* Estimated income and expenses
** Depends upon availability of funds

Table 9. b. Operating Budget
School of Optometry
University of Alabama in Birmingham

experience of Alabama is shown in Figure 9 and Tables 9.a. and 9.b.

The estimates for the development of a new school of optometry in Florida to be developed in an academic health center produced the same figures, that is, $8,000 per student per year for a developed program.

a. The National Academy of Sciences Institute of Medicine study of the costs of health professions education indicates for optometry that the "total education cost" was $4,250 and the "net educational expenditure" was $3,100 per student per year for 1972-73 for the schools studied. Part of the difference between these figures and the estimate above relates to the methodology and basic assumptions of cost allocation used in the IOM study. Part of the difference is related to the quality of education provided in an academic health center. In making plans for the development of a school of optometry it is felt that $8,000 per student per year is a more realistic operational cost estimate. Obviously this should be adjusted for inflation.

2. Capital Budget

An optometry program requires specialized laboratories and clinics, as well as classrooms, offices, research and support space. In the initial phases of a school of optometry it is possible to establish the program in temporary remodeled space. As the number of students increases and the program develops, it is appropriate to construct a facility designed specifically for the school of optometry. Costs of suitable construction and equipment have increased rapidly in the last five years. It is currently estimated that the cost of construction of a facility and equipment for 60 entering optometry students per

year would be approximately $10,000,000.

a. In the State of Maryland, basic building costs for academic facilities, site preparation, utilities, and built-in equipment, have risen from $24 per gross square foot to $55 per gross square foot between 1969 and 1974. It is estimated that these costs could be as high as $76 per gross square foot for health science buildings in the next few years.

   Alabama is nearing completion of a 70,000 gross square foot building for its School of Optometry at a total cost of nearly $70 per gross square foot including fixed and removable equipment for a student body of 200 (40 optometry students in each of four years, 20 optometric technician students, and 20 graduate students).

b. Space and equipment standards for optometry schools are available from the official accrediting agency, the Council on Optometric Education of the American Optometric Association. While the space standards are program-sensitive they approximate 480 net assignable square feet per enrolled optometry student. Some of the space and facilities may be shared; for example, in Alabama the basic sciences laboratories and the Medical Center Library are shared with other professional schools.

D. Time Factors

It is important to recognize that the plan proposed for the long range development of optometric manpower will take time to implement, even under the most favorable conditions.

1. The projections of needs, per state per year and for the region, are based on a straight-line projection to reach the target ratio of optometrists to population by 1990. While it is convenient to spread the "need" side of the manpower equation uniformly over the time interval (e.g., 355 students per year, 1974-90), it is clearly inappropriate to assume that the "supply" could be developed instantly to produce that many student places. It takes a minimum of 10 years between the time a new school is authorized and the time when it graduates its full class of optometrists. For example, Alabama, which authorized a school in 1967 and started in 1969, will graduate its first full class of 40 students in 1979; Houston is now authorized to admit 100 students on completion of its new facility in 1977 but will graduate its first such class in 1981; and Florida, authorized to develop a school within the biennium, if it actually starts the school in 1976, would not graduate its first pilot class until 1980 and probably its first full class not until 1985. Even if the two additional new schools recommended in this plan were to be authorized in 1975 it is probable that it would be 1985 before they would each graduate a class of 60 students.

2. The present opportunities for optometric manpower education and those being expanded at Alabama, Houston and authorized for Florida are minimally sufficient to maintain the present low manpower ratios. The perceived deficit of more than 1600 optometrists in the SREB region will continue until new schools are developed and are fully operational. To correct this deficit by 1990 will require action and support for expeditious implementation of at least this proposed program.

3. Delay in implementing the program of expansion of optometric educational opportunities will limit or delay achieving the goal of 9.1 optometrists per 100,000 population by 1990, or will make it necessary to increase the number of entering places when plans are implemented. Assuming the usual delay between authorization and implementation, the time required to develop the program and graduate the first students, implementing the development of the additional schools proposed in this plan will only begin to approach the goal by 1990.

4. Costs, particularly of construction and equipment, have increased at a rate of more than 12 percent per year compounded for the last five years and are presently projected to rise at an even higher rate in the future. It is likely that any long delay will increase the costs of providing the proposed educational programs.

Chapter IV

IV. FINDINGS AND CONCLUSIONS

A. Summary of Findings

1. Manpower studies indicate there is a severe shortage of optometric manpower to meet the vision care needs in the SREB region. At the present time, there are inadequate educational facilities to provide the perceived requirements for optometric manpower. The Committee concludes that there is a pressing and high priority need for the development of excellent quality educational opprotunities for optometric manpower to meet the minimum requirements of the citizens of the region.

2. There has been sufficient study of optometric manpower so that valid comparisions can be made as to the ratio of optometrists to the population of the various states: by state, by region, and for the nation as a whole. The data show that all of the 14 states which are members of the Southern Regional Education Board, both individually and collectively, are below the national average of 9.1 active optometrists per 100,000 population; 10 of these states are below the "critical shortage" ratio of 6.7 per 100,000, based on studies conducted as late as 1974 by HEW-Public Health Service, Health Resources Administration, Bureau of Health Resources Development, Division of Manpower Intelligence.

3. There is a great need for the vision care services that are provided by optometrists and ophthalmologists. Members of these two independent cooperating professions serve complementary roles in the provision of these vision care services.

4. There has been adequate exploration of the conditions which are most

likely to insure effective and efficient optometric education. The report of the Association of Schools and Colleges of Optometry entitled "Statement on New Schools and Colleges of Optometry," dated September 12, 1974, elaborates specific guidelines for high quality optometric education. There are 25 locations in the SREB states which meet two of the key guidelines of the Association, namely, that the location be in an academic health center associated with a university and that it be located in a population area of 200,000 or more.

5. If the states in the SREB region are to improve their present ratios of optometrists to population in order to meet the national ratio of 9.1 active optometrists per 100,000 population by 1990, 134 additional student places must be provided for SREB states immediately, on the basis of 1974 data.

6. Schools of optometry in the SREB states have contracted for almost as many students as they can reasonably be expected to accommodate with present resources. If the SREB states as a whole are to reach the national average in terms of optometrists per 100,000 population by 1990, the additional student spaces required appear to be greater than can be met through a reasonable increase in enrollment in the existing schools of optometry in the region. Since similar pressures exist on schools of optometry outside of the SREB region, it is impossible for them to provide the spaces required.

B. Conclusions and Recommendations

1. Need for New Schools of Optometry

The Committee concludes that there is a pressing and high priority need for the development of excellent quality educational opportunities for optometric manpower to meet the minimum requirements of the citizens

of the region. Existing schools cannot be expected to increase their enrollment sufficiently to meet this need. While there is clearly a need for new schools of optometry, and there are locations in each state that meet the criteria of the Association of Schools and Colleges of Optometry, unilateral action on the part of each state to develop an "in-state" school would produce considerably more optometrists than required.

Recommendation #1.

New schools of optometry, based on regional needs and supported on a regional basis, be established in the SREB states.

2. Quality of Optometric Education

Schools of optometry should be developed in academic health centers of state universities where they can share the excellence of the basic health science resources of these institutions and develop the communications and interprofessional relations for maximum contribution to the vision welfare of the public.

Recommendation #2.

New schools of optometry should be established in academic health centers within universities.

Recommendation #3.

Existing schools of optometry, not meeting the above criteria, should be encouraged to develop such affiliations.

3. Quantity of Education Resources for Optometry

The number of entering places for optometry students needs to be expanded in the region. We conclude that a reasonable, conservative

and defensible goal is to develop the educational resources that will produce sufficient optometrists so that the region may reach the present national average by 1990, that is, 9.1/100,000. Since optometry graduates tend to practice in the region in which they are educated and since the optimum size for schools of optometry is approximately 60 students in each entering class, it is concluded that a minimum of two and a maximum of three additional schools be developed in the region.

It is recognized that each state may initiate its own program, but it would seem that the needs may be better satisfied and the costs more equitably shared by establishing regional schools with cooperative support. There are various reasonable combinations of states that will accomplish this purpose. Those proposed by the Committee are only suggested as possible arrangements that should be considered.

It must be recognized that there may be a time lag of approximately 10 years between the commitment to a program and the graduation of its first full class so there is considerable urgency in the establishment of these schools. Quite simply, at the present time we are falling further and further behind.

Any action by a state or by an institution which significantly increases or decreases opportunities for optometric education by the creation of a new school or by changes in enrollments in existing schools will have a considerable impact upon the need for additional spaces in schools of optometry for those states which are not now meeting their optometric manpower goals and indirectly on all other SREB states.

The fact that the Board of Trustees of the Southern College of

Optometry has authorized a major reduction in the number of entering optometry students, but has not made a commitment to do so, and may not be able to do so because of external factors beyond its control, creates a very serious problem for those planning to meet unmet needs. It is recognized that Southern College of Optometry, being a private institution, operates from a relatively limited base of financial support. Further, its opportunities for close liaison with the larger environment of an academic health center could be somewhat restricted. The present stiuation appears to be that the Southern College of Optometry and the Tennessee Higher Education Commission have discussed the possibility that the Southern College of Optometry might become part of the Tennessee State System of Higher Education. No decisions have been made. Yet, because of the number of optometry student spaces involved, the need for planning for an entire new school hinges upon knowing what decisions are reached regarding the future of Southern College of Optometry.

Because of potential changes in present enrollments which are not known at this time, but which might become known in the near future, two alternatives for new schools are presented in this Plan. These alternatives were developed on the basis of available data and in terms of what appears to be a logical grouping of states which could sustain one school within the grouping <u>at reasonable unit cost</u>. This does not mean, however, that only those states in the particular group could send students to the state which developed the school within its boundaries. Allocation of spaces should follow present SREB procedures.

<u>Recommendation #4.</u>

The Tennessee Higher Education Commission and the

Southern College of Optometry be encouraged to expedite discussions as to the future of Southern College of Optometry, particularly with regard to that College becoming a part of the State System of Higher Education and meeting the criteria set forth in this Plan.

The Tennessee Higher Education Commission and the Southern College of Optometry be requested to let SREB know as soon as possible what agreements, if any, are reached which will affect regional or state planning for optometric education in SREB states.

Recommendation #5.

If Alabama and Houston both increase their enrollment to planned capacity, Florida initiates its authorized school, and Southern College of Optometry continues its present enrollment policy, then a new school of optometry should be developed, with a capacity for 60 entering students, as soon as possible in each of the two following areas:

a. Maryland, Virginia, West Virginia

b. North Carolina, South Carolina, Georgia

However, if Southern College of Optometry reduces the size of its entering class by 50 percent (authorized by the Board of Trustees of Southern College to take place by 1980), Alabama and Houston increase their enrollment to planned capacity, and Florida initiates its authorized school, then a new

school of optometry be developed, with a capacity for 60 entering students, as soon as possible in each of the three following areas:

a. Maryland, Virginia, West Virginia

b. North Carolina, South Carolina, Georgia

c. Arkansas, Louisiana, Mississippi

Recommendation #6.

States that have schools with planned expansion or have authorization for new schools make every effort to expedite the planned development.

4. Graduate Programs and Research

The principal scientific basis for optometric service lies in the field of physiological optics. The four such graduate programs in the country are related to schools of optometry. The only such program in the SREB region was only recently started at the University of Houston. There is an urgent need for such qualified faculty for existing and new schools of optometry. There is also a pressing need for basic and applied research in vision both to develop understanding of the nature of the visual system and to create more effective treatment modalities to ameliorate its deficiencies.

Recommendation #7.

New and existing schools of optometry should develop research and graduate programs in physiological optics in conjunction with basic health science departments of the academic health centers and the university graduate programs.

5. Development of Optometric Technicians Programs

Properly trained optometric technicians can have a direct bearing on the number of optometrists needed to provide adequate optometric services to the public. The ratio of optometrists to population recommended in this report is not as high as that recommended by the American Optometric Association. Through the utilization of properly trained optometric technicians, a significant increase in vision care services can be provided with resulting benefit to the public and to the optometric profession. The training and employment of optometric technicians also provides a greater flexibility to increases and decreases in demands for optometric services than that provided by professional schools which require as much as four times the amount of educational training. Further, experience has shown that Community Colleges can be very successful in providing technician level education in the health fields and are the most flexible in increasing and decreasing the size of their program enrollments in response to changing needs of society.

Recommendation #8.

New optometric technician programs be developed in community colleges where feasible in conjunction with schools of optometry or optometric clinics which will assure adequate quality of didactic and clinical experience.

If the situation in a state is such that it is not feasible to utilize community colleges in conjunction with schools of optometry for optometric technician education within the state, the State higher education agency should assure itself that the programs presently

offered or to be offered will adequately meet the needs, qualitatively and quantitatively; and, if State resources are involved, that the alternative adopted is the most effective and efficient way of providing the optometric technician education offered in the State.

6. Continuing Education

Organized continuing education for practicing optometrists is a high priority function for the present schools of optometry. Only through this means can the latest advances in knowledge, clinical skills, techniques and instrumentation be made widely available to the public.

Recommendation #9.

Present and new schools of optometry should provide high quality continuing education for practicing optometrists. SREB should explore ways of encouraging this development.

7. Financing Optometric Education

It would seem financially prudent for states planning for their optometric manpower needs, particularly where those needs are for less than 60 entering students per year, to join together to develop regionally planned schools of optometry.

While optometric education is not as expensive as either medical education or dental education, there are considerable costs involved. The extent of the cost is significantly affected by such factors as the utilization of already established health sciences programs and facilities, by total enrollment in the institution, by program enrollment, by faculty salary and by faculty load.

The concept of contracts-for-service through SREB for the support of optometric education for those states not developing a school of

optometry within their respective states is strongly supported. Opportunities are increased and costs are reduced through the continuation and extension of this policy. If the cost of optometric education were the only program to be shared among the states, the states which send their students out-of-state could well be expected to share the complete cost of optometric education; however, SREB states share in five other contract-for-services program -- dentistry, medicine, public health, social work, and veterinary medicine -- and the concept of equitable sharing of costs must be considered in terms of the totality of all of these programs. SREB anticipates reviewing the contract fee for all its contracts-for-services programs every two years giving full recognition to the increased costs of those providing training programs, and proposing changes in fees, which though not providing full cost, will bear a reasonable relationship to costs and not be unfair to the providing institution. This policy has worked successfully for a long time and is consistent with the spirit of community that exists in the SREB states.

Recommendation #10.

The current SREB policy of contract-for-services continue to be applied to regional programs of optometric education.

8. A Process for Implementation

The determination to develop a new School of Optometry in any state is related to the economic resources and political posture in that state and upon the initiative of those who believe a new school is needed in order to meet a standard of service they deem essential to the public welfare. However, in some states the number of students

who would be enrolled to serve only the in-state needs of the state would in all likelihood be less than that considered to be the minimum number needed for the effective and efficient operation of the school. Hence, cooperative action is a logical process.

Recommendation #11.

It is recommended that in order to ensure the consideration of coordinated regional plans where group action seems most appropriate, formal channels of communication be established promptly by those states which are geographically related. Although proposed groupings are presented in this Plan on the basis of statistical analysis, other groupings should be considered where there is a mutual desire among participating states.

Recommendation #12.

It is recommended that SREB arrange promptly with those states interested in cooperating with other states in developing a new regional school of optometry within a geographic area of the SREB region to designate representatives (e.g., from state higher education agency, university, professionals in the field, executive branch, and legislative branch) to meet under SREB aegis to determine which state will develop a new school within its state and to work out arrangements for cooperative action among those states.

9. Meeting Changing Conditions

Although there is a serious shortage of optometrists in the Southern Region based on national averages, and an even greater shortage throughout the region and the nation based on recommendations of the American Optometric Association, this Plan porposes that it will be an ambitious enough task, at this point in time, to bring the SREB states up to the national average. However, continuous planning with provision for up-date is highly desirable so that changing conditions do not make this Plan obsolete.

Recommendation #13.

It is recommended that SREB set up a monitoring mechanism for continuous evaluation of changes in optometric manpower requirements and the extent to which educational opportunities are related to meeting existing and projected needs.

APPENDIX A

For Each SREB State:

a. Present and Projected Needs for Optometrists

b. Distribution of Optometrists by County

c. "Critical Shortage" Counties for Optometrists

d. Distribution of Board Certified Ophthalmologists by County

Alabama	1
Arkansas	5
Florida	9
Georgia	13
Kentucky	17
Louisiana	21
Maryland	25
Mississippi	29
North Carolina	33
South Carolina	37
Tennessee	41
Texas	45
Virginia	49
West Virginia	53

O P T O M E T R I S T S

ALABAMA - 1973

Population	3,510,000
Active Optometrists	151
Present Ratio	4.3/100,000
Deficit*	168

School of Optometry, University of Alabama in Birmingham (1969)
**Number needed to provide national average (9.1/100,000).*

ALABAMA - 1990

Population	3,819,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	348
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	21

ALABAMA

OPTOMETRISTS 1973

N = 158
Active = 151
Ratio = 4.4/100,000

Total Counties = 67
Counties with O.D.'s = 43

Source: Division of Manpower Intelligence, DHEW, 1973

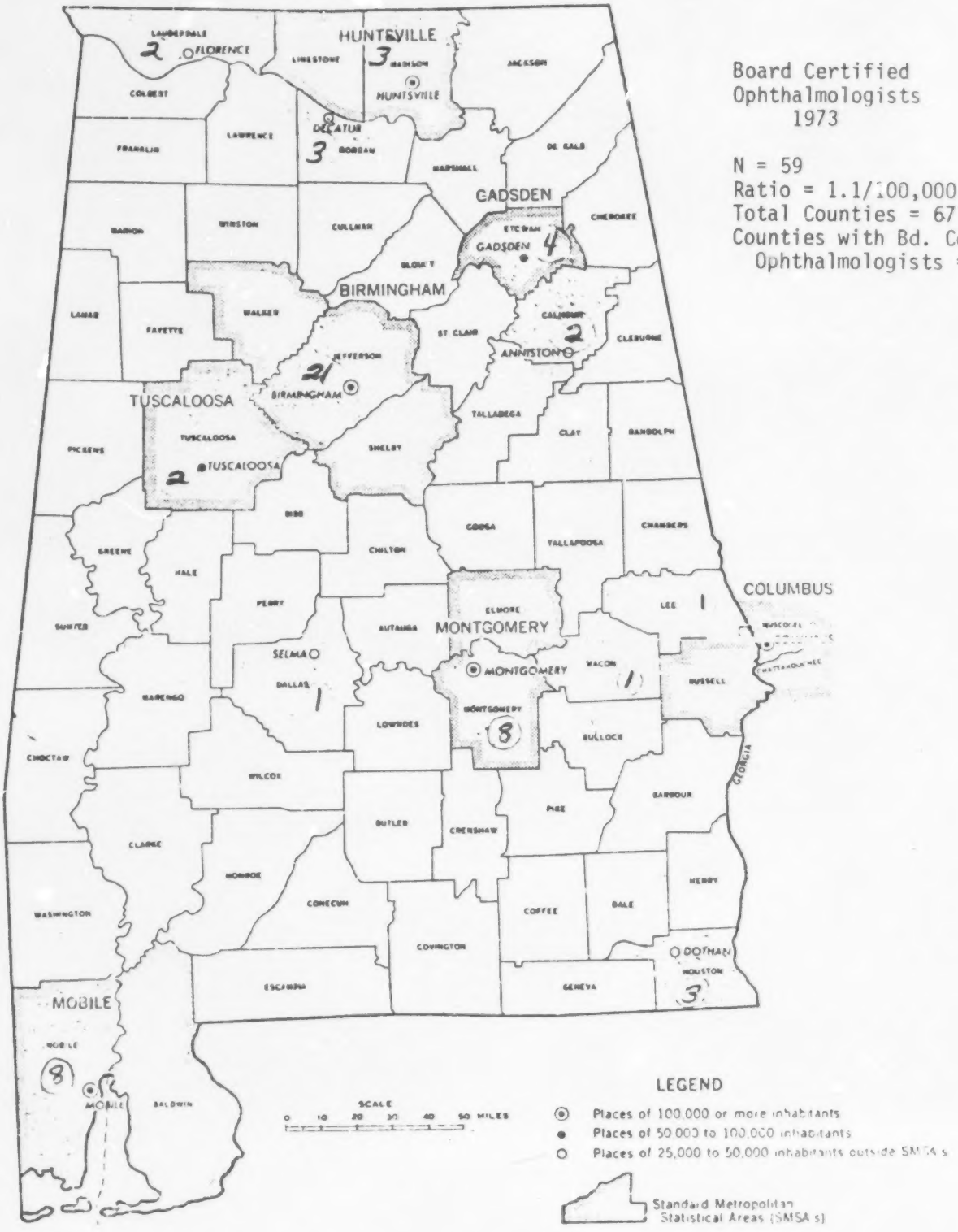
ALABAMA

CRITICAL SHORTAGE AREAS: OPTOMETRISTS 1973

Total Counties = 67

Critical Shortage Counties = 45

Source:
Bureau of Health Resources Development, DHEW, 1973



Board Certified
Ophthalmologists
1973

N = 59
Ratio = 1.1/100,000
Total Counties = 67
Counties with Bd. Cert.
Ophthalmologists = 13

Source: Red Book, Professional Press, Chicago, 1973.

O P T O M E T R I S T S

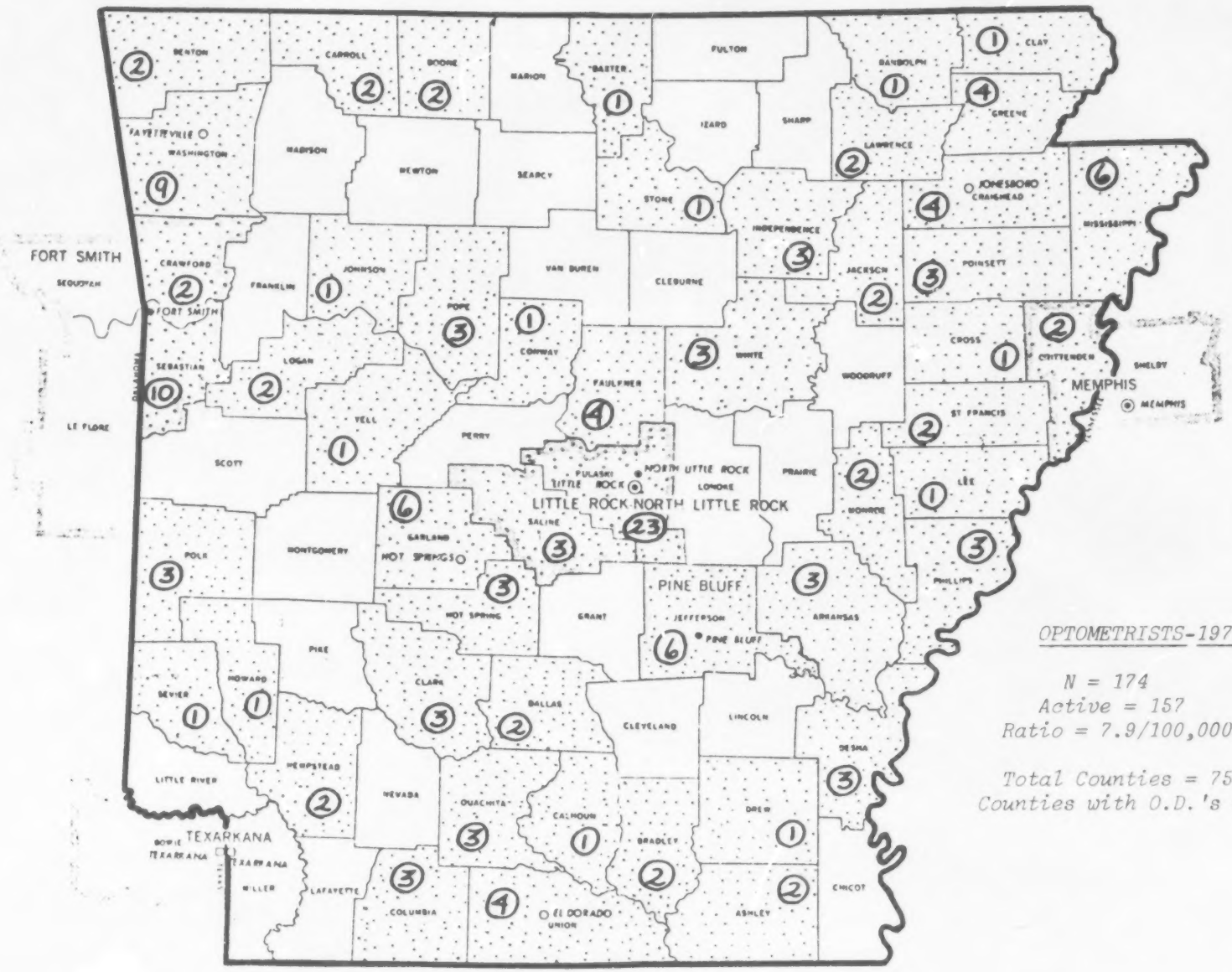
ARKANSAS - 1973

Population	1,978,000
Active Optometrists	157
Present Ratio	7.9/100,000
Deficit*	23
SREB Contracts	13/year (1974)

**Number needed to provide national average (9.1/100,000).*

ARKANSAS - 1990

Population	2,210,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	201
Number of Optometry Students Per Year (considering death, disability and retirement) needed to produce 9.1/100,000 active optometrists in 1990	10



OPTOMETRISTS-1973

N = 174
Active = 157
Ratio = 7.9/100,000

Total Counties = 75
Counties with O.D.'s = 52

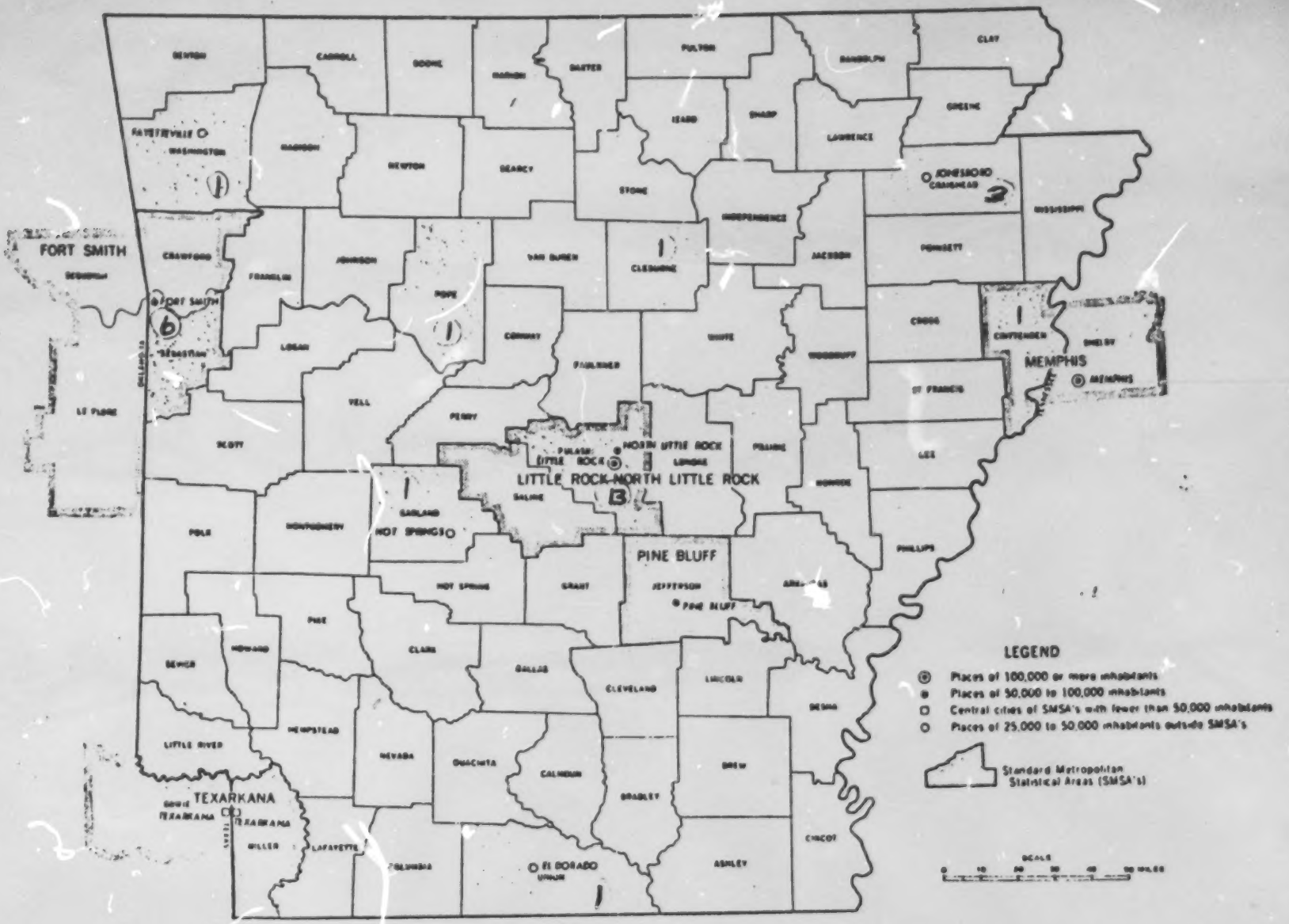
Source: Division of Manpower Intelligence, DHEW, 1973

CRITICAL SHORTAGE AREAS: OPTOMETRISTS-1973

Total Counties = 75

Critical Shortage Counties = 26

Source: Bureau of Health Resources Development, DHEW, 1973



Board Certified Ophthalmologists 1973
N = 28 Ratio = 1.0/100,000
Total Counties = 75
Counties with Bd. Cert. Ophthalmologists = 9
Source: Red Book, Professional Press, Chicago, 1973.

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS

O P T O M E T R I S T S

FLORIDA - 1973

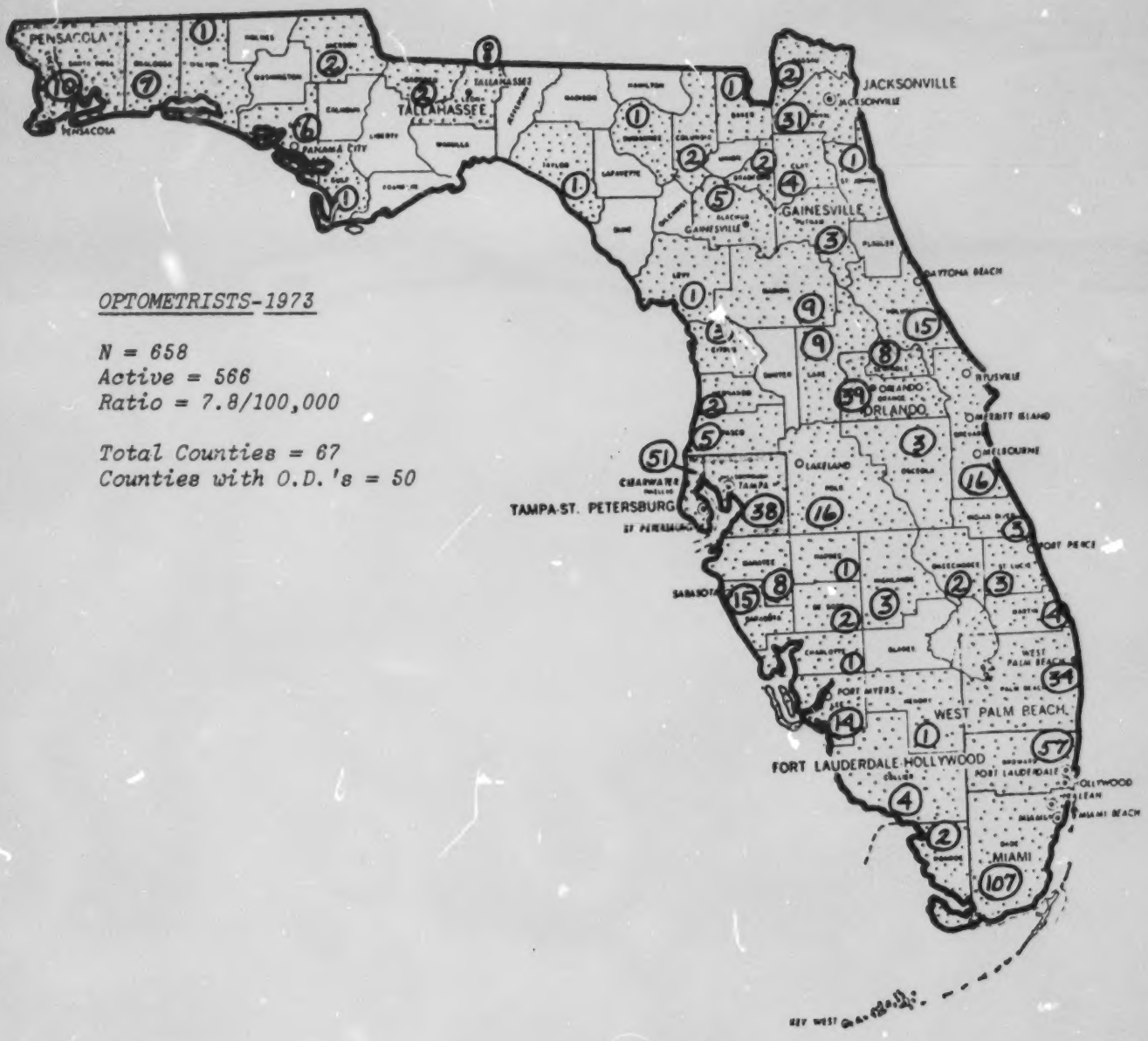
Population	7,259,000
Active Optometrists	566
Present Ratio	7.8/100,000
Deficit*	95
SREB Contracts	20/year (1974)

**Number needed to provide national average (9.1/100,000).*

FLORIDA - 1990

Population	8,515,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	775
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	41

FLORIDA



OPTOMETRISTS-1973

N = 658
Active = 566
Ratio = 7.8/100,000

Total Counties = 67
Counties with O.D.'s = 50

Source:
Division of Manpower Intelligence, DHEW, 1973.

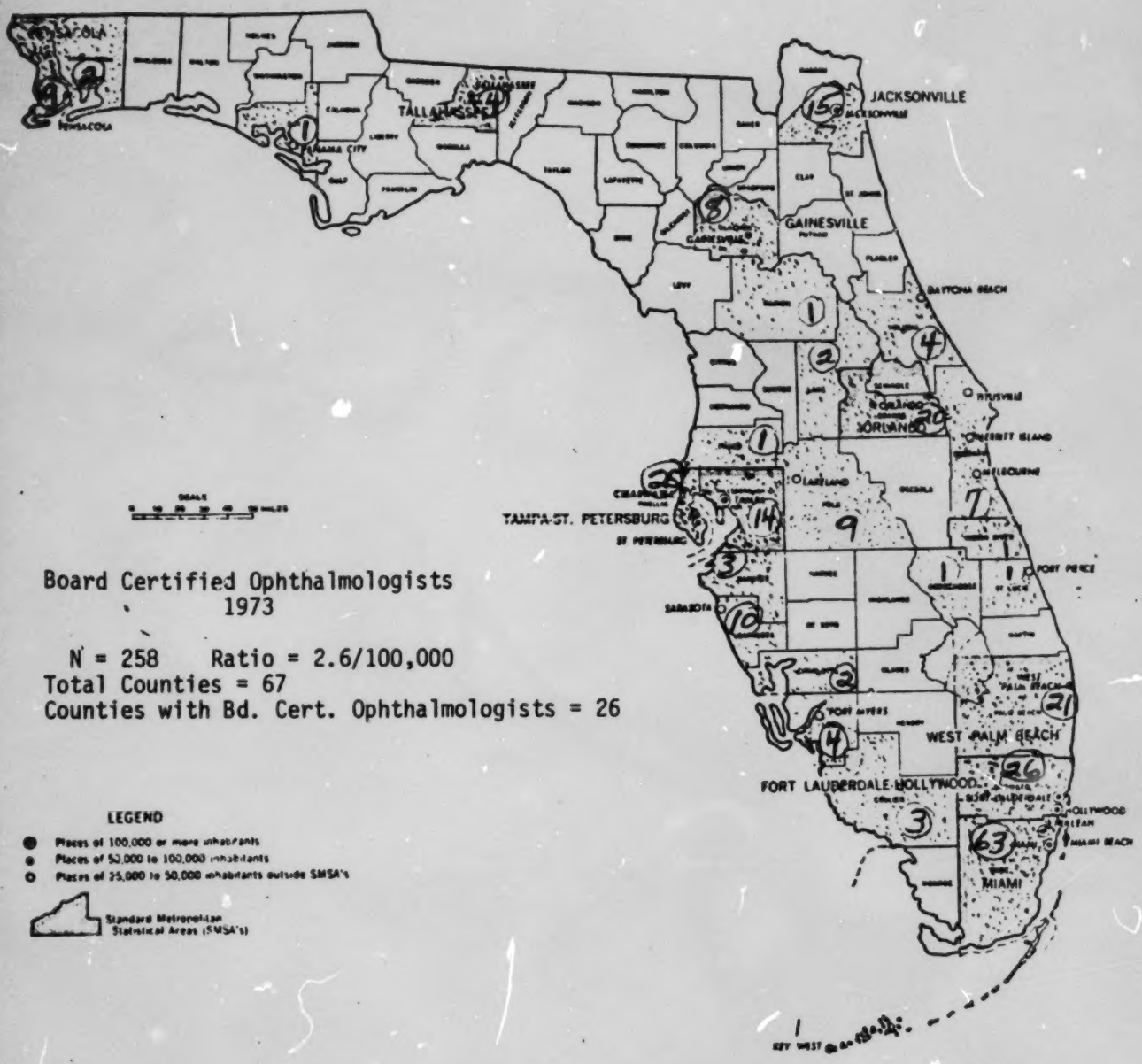
FLORIDA

CRITICAL SHORTAGE AREAS:
OPTOMETRISTS 1973

Total Counties = 67

Critical Shortage Counties = 31

Source:
Bureau of Health Resources Development, DHEW, 1973



Board Certified Ophthalmologists
1973

N = 258 Ratio = 2.6/100,000
Total Counties = 67
Counties with Bd. Cert. Ophthalmologists = 26

Source: Red Book, Professional Press, Chicago, 1973.

O P T O M E T R I S T S

GEORGIA - 1973

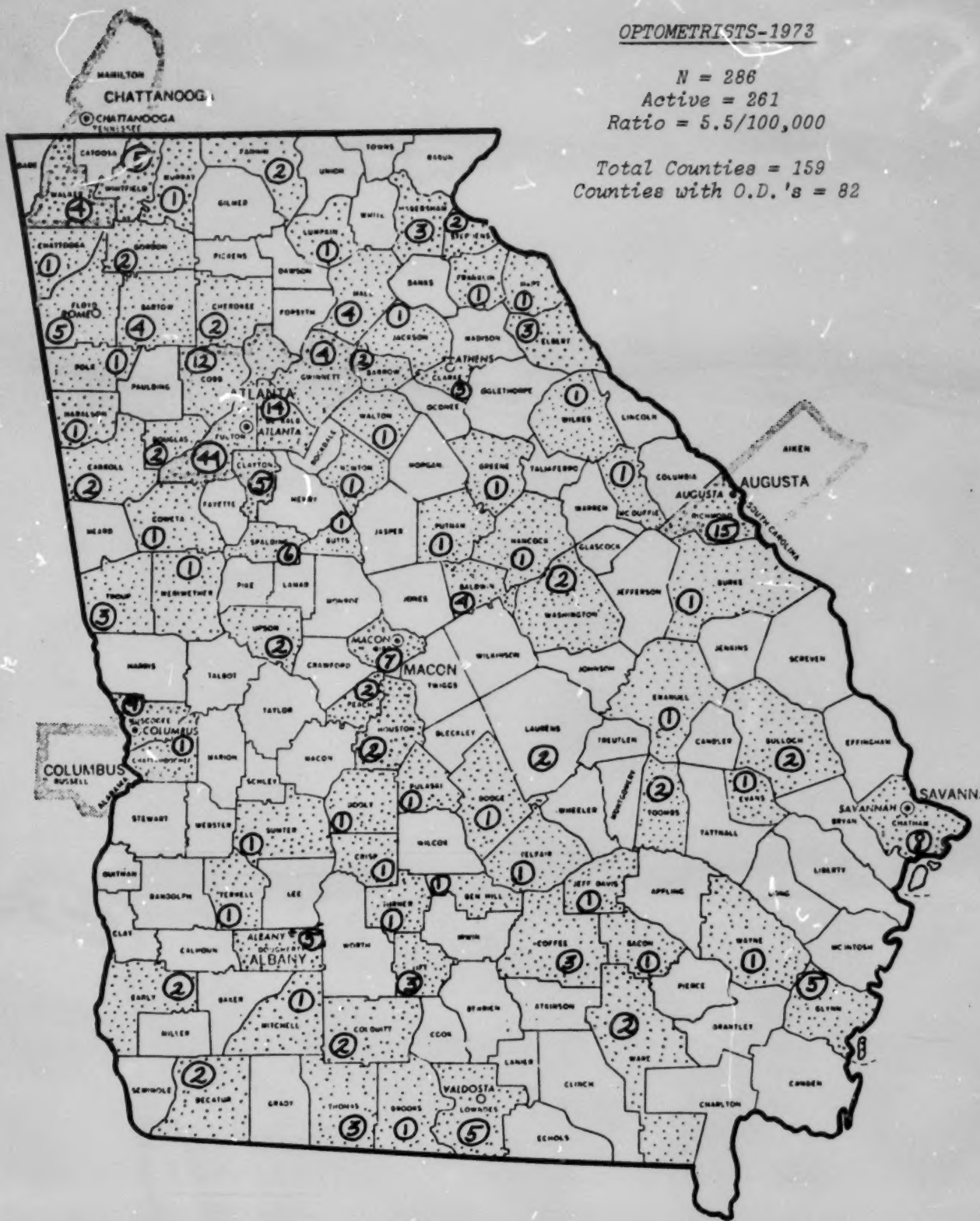
Population	4,720,000
Active Optometrists	261
Present Ratio	5.5/100,000
Deficit*	169
SREB Contracts	10/year (1974)

**Number needed to provide national average (9.1/100,000).*

GEORGIA - 1990

Population	5,598,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	510
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	29

GEORGIA



OPTOMETRISTS-1973

N = 286
Active = 261
Ratio = 5.5/100,000

Total Counties = 159
Counties with O.D.'s = 82

Source: Division of Manpower Intelligence, DHEW, 1973

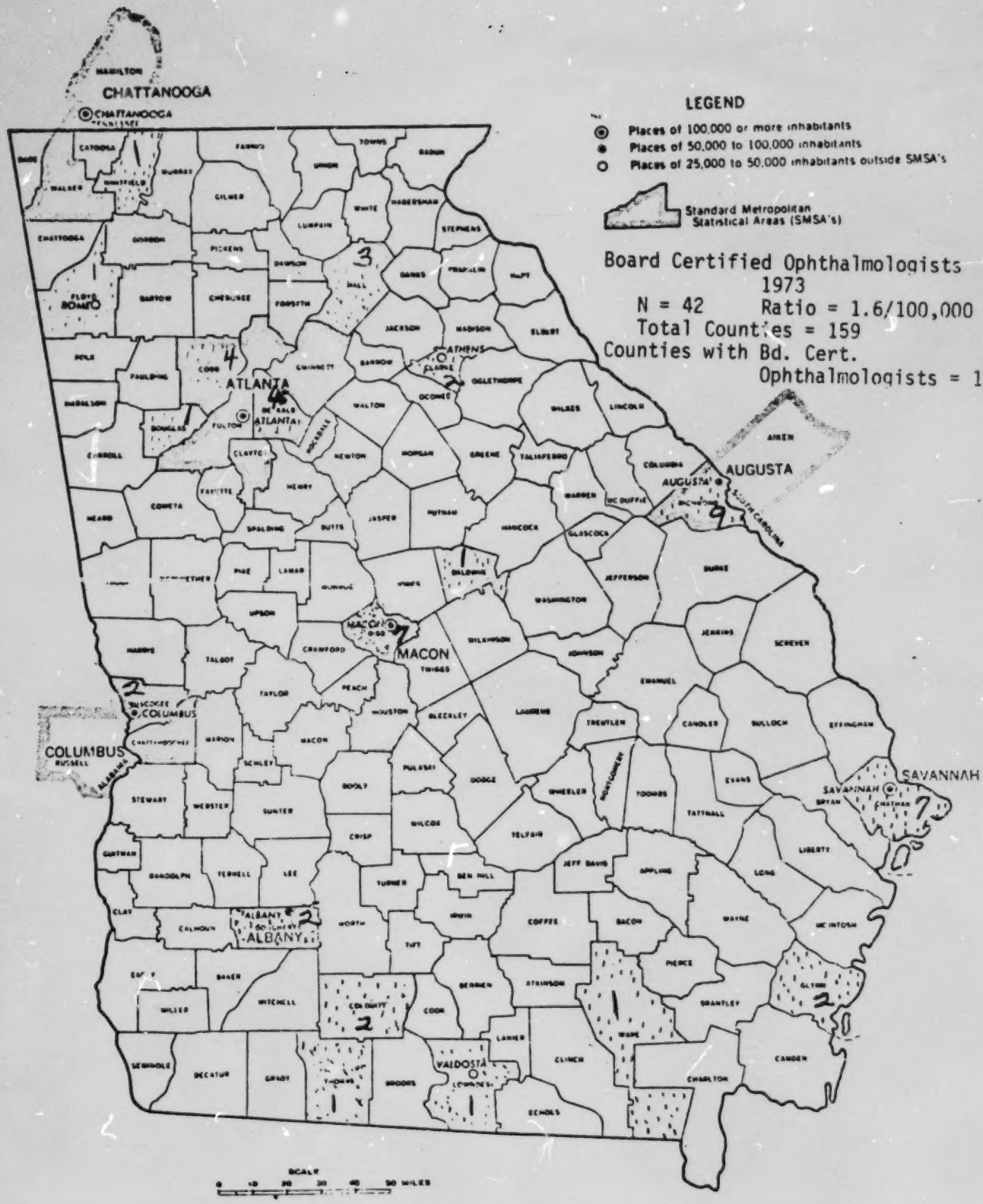
GEORGIA

CRITICAL SHORTAGE AREAS: OPTOMETRISTS-1973

Total Counties = 159

Critical Shortage Counties = 66

Source: Bureau of Health Resources Development, DHEW, 1973



Source: Red Book, Professional Press, Chicago, 1973.

O P T O M E T R I S T S

KENTUCKY - 1973

Population	3,299,000
Active Optometrists	217
Present Ratio	6.6/100,000
Deficit*	83
SREB Contracts	10/year (1974)

**Number needed to provide national average (9.1/100,000).*

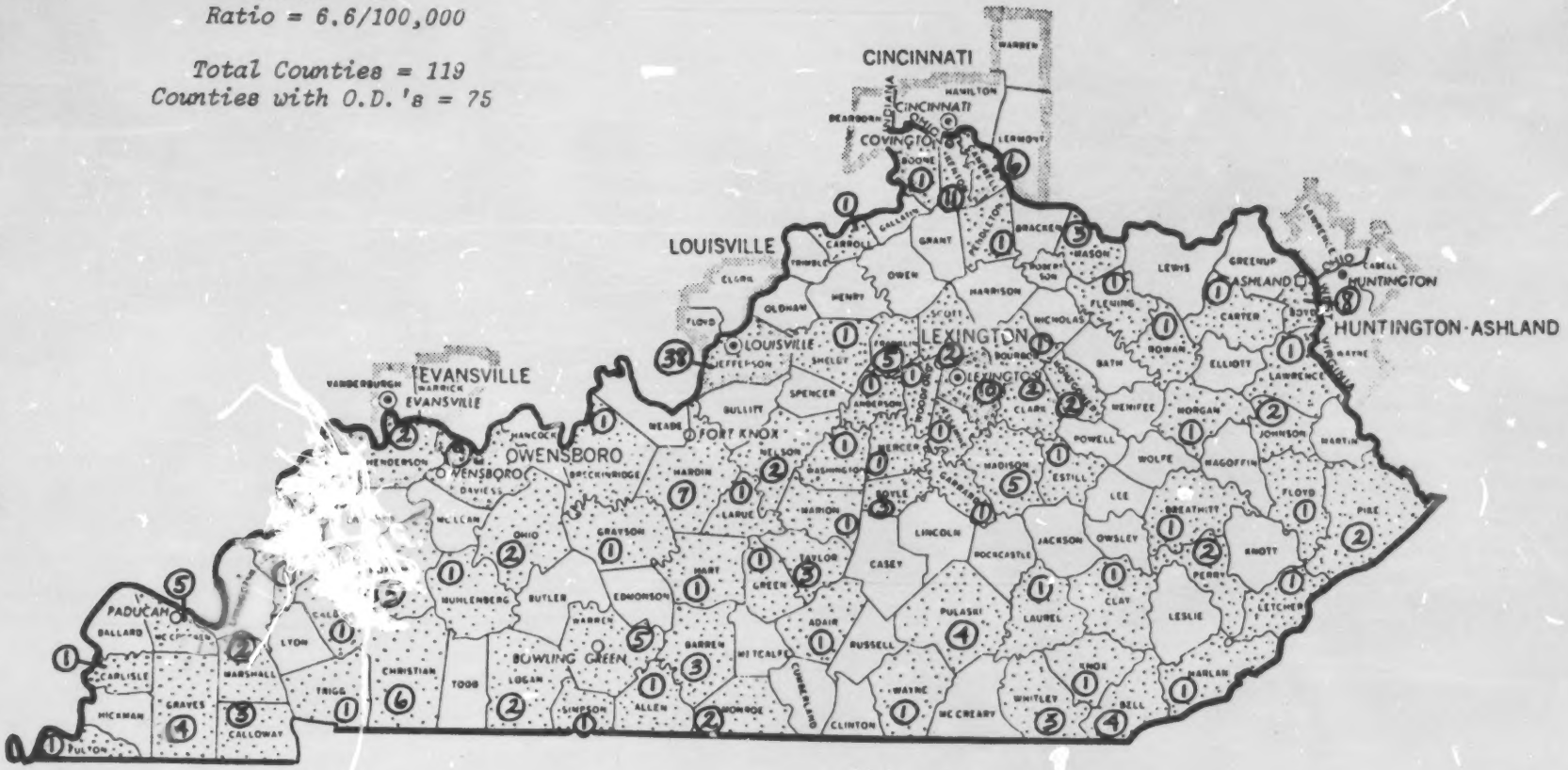
KENTUCKY - 1990

Population	3,612,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	329
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	17

OPTOMETRISTS - 1973

N = 238
Active = 217
Ratio = 6.6/100,000

Total Counties = 119
Counties with O.D.'s = 75



Source:
Division of Manpower Intelligence, DHEW, 1973

CRITICAL SHORTAGE AREAS:
OPTOMETRISTS 1973

Total Counties = 119

Critical Shortage Counties = 48

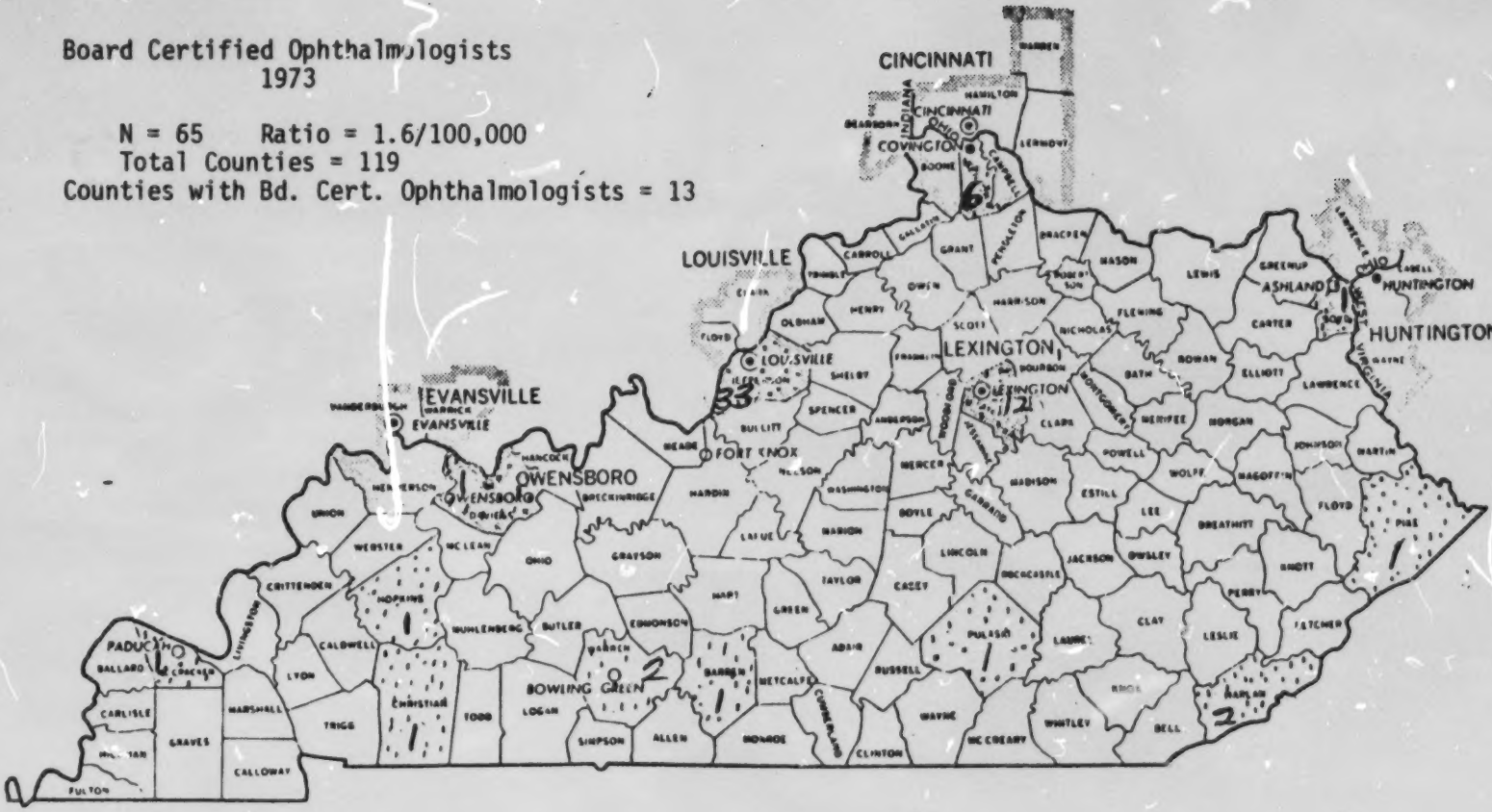
KENTUCKY

A - 19

Source:
Bureau of Health Resources Development, DHEW, 1973.

Board Certified Ophthalmologists
1973

N = 65 Ratio = 1.6/100,000
Total Counties = 119
Counties with Bd. Cert. Ophthalmologists = 13



LEGEND

- ◉ Places of 100,000 or more inhabitants
- ● Places of 50,000 to 100,000 inhabitants
- □ Central cities of SMSA's with fewer than 50,000 inhabitants
- ○ Places of 25,000 to 50,000 inhabitants outside SMSA's
- ERIE — Standard Metropolitan Statistical Areas (SMSA's)

Source. Red Book, Professional Press, Chicago, 1973.

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS

O P T O M E T R I S T S

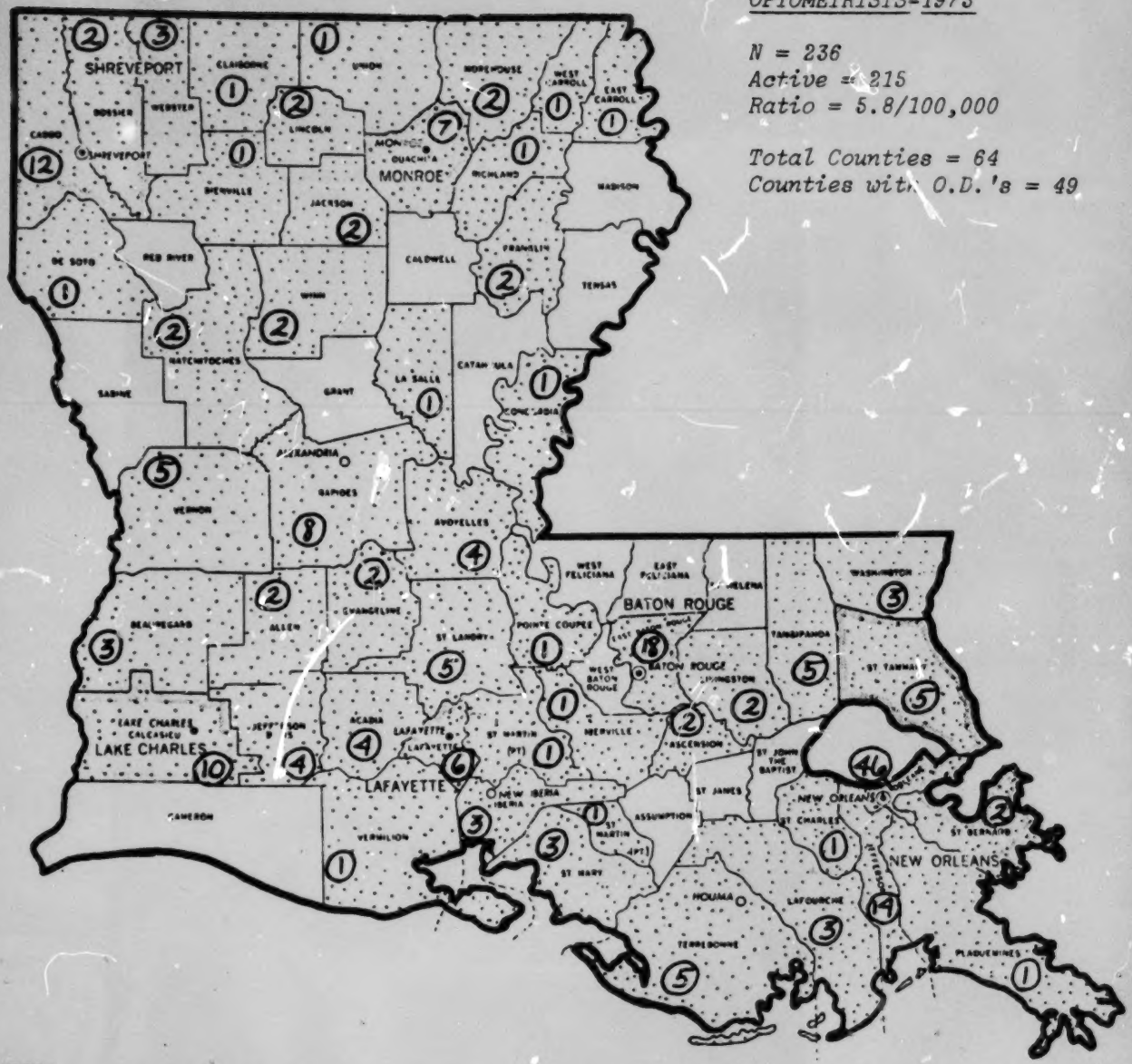
LOUISIANA - 1973

Population	3,720,000
Active Optometrists	215
Present Ratio	5.8/100,000
Deficit*	124
SREB Contracts	12/year (1974)

Number needed to provide national average (9.1/100,000).

LOUISIANA - 1990

Population	4,394,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	400
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	23



OPTOMETRISTS-1973

N = 236
Active = 215
Ratio = 5.8/100,000

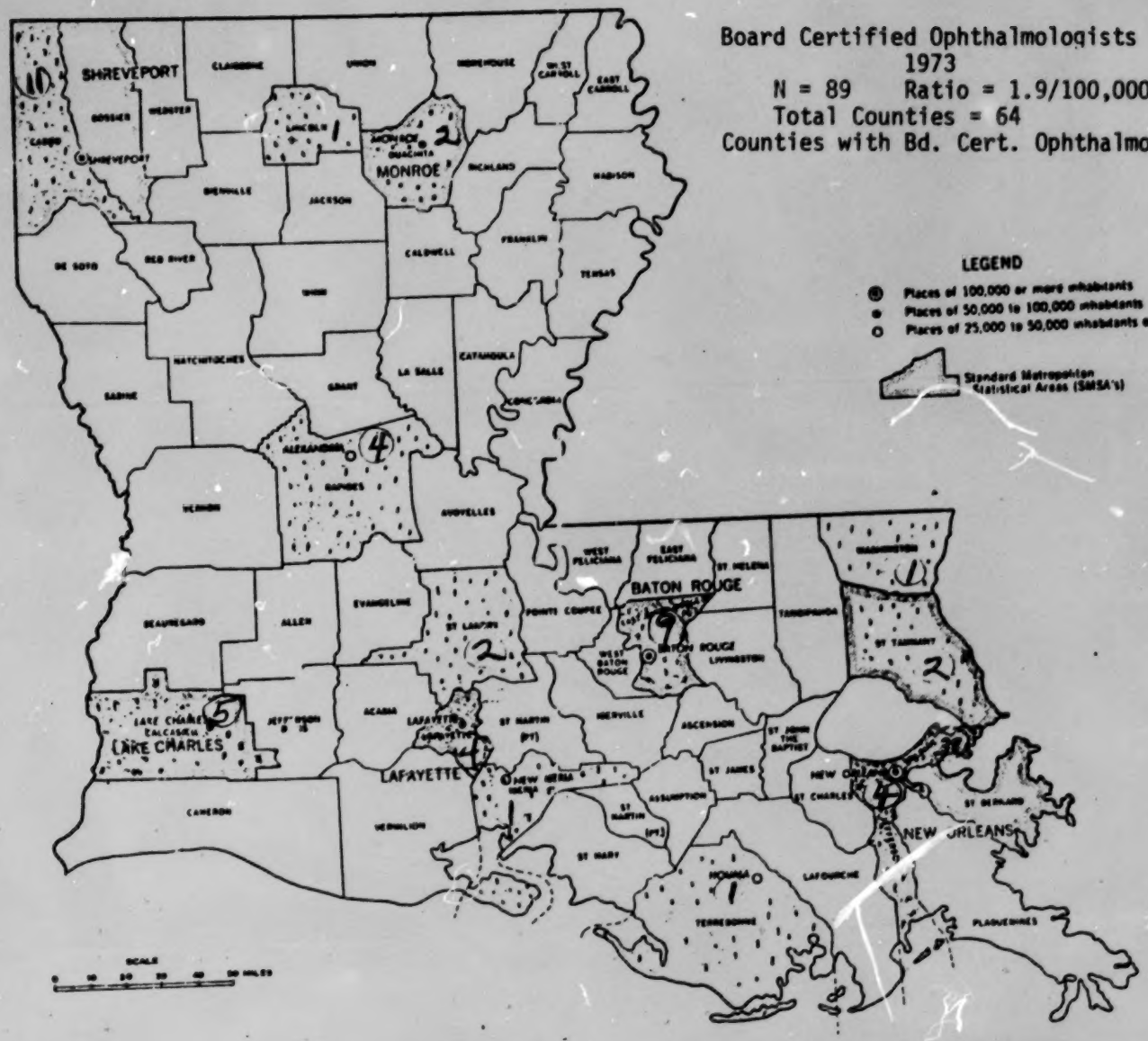
Total Counties = 64
Counties with O.D.'s = 49

Source:
Division of Manpower Intelligence, DHEW, 1973

CRITICAL SHORTAGE AREAS: OPTOMETRISTS 1973

Total Counties = 64
Critical Shortage Counties = 25

Source:
Bureau of Health Resources Development, DHEW, 1973



Board Certified Ophthalmologists
1973
N = 89 Ratio = 1.9/100,000
Total Counties = 64
Counties with Bd. Cert. Ophthalmologists = 16

Source: Red Book, Professional Press, Chicago, 1973.

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS

O P T O M E T R I S T S

MARYLAND - 1973

Population	4,056,000
Active Optometrists	205
Present Ratio	5.1/100,000
Deficit*	164
SREB Contracts	5/year (1974)

**Number needed to provide national average (9.1/100,000).*

MARYLAND - 1990

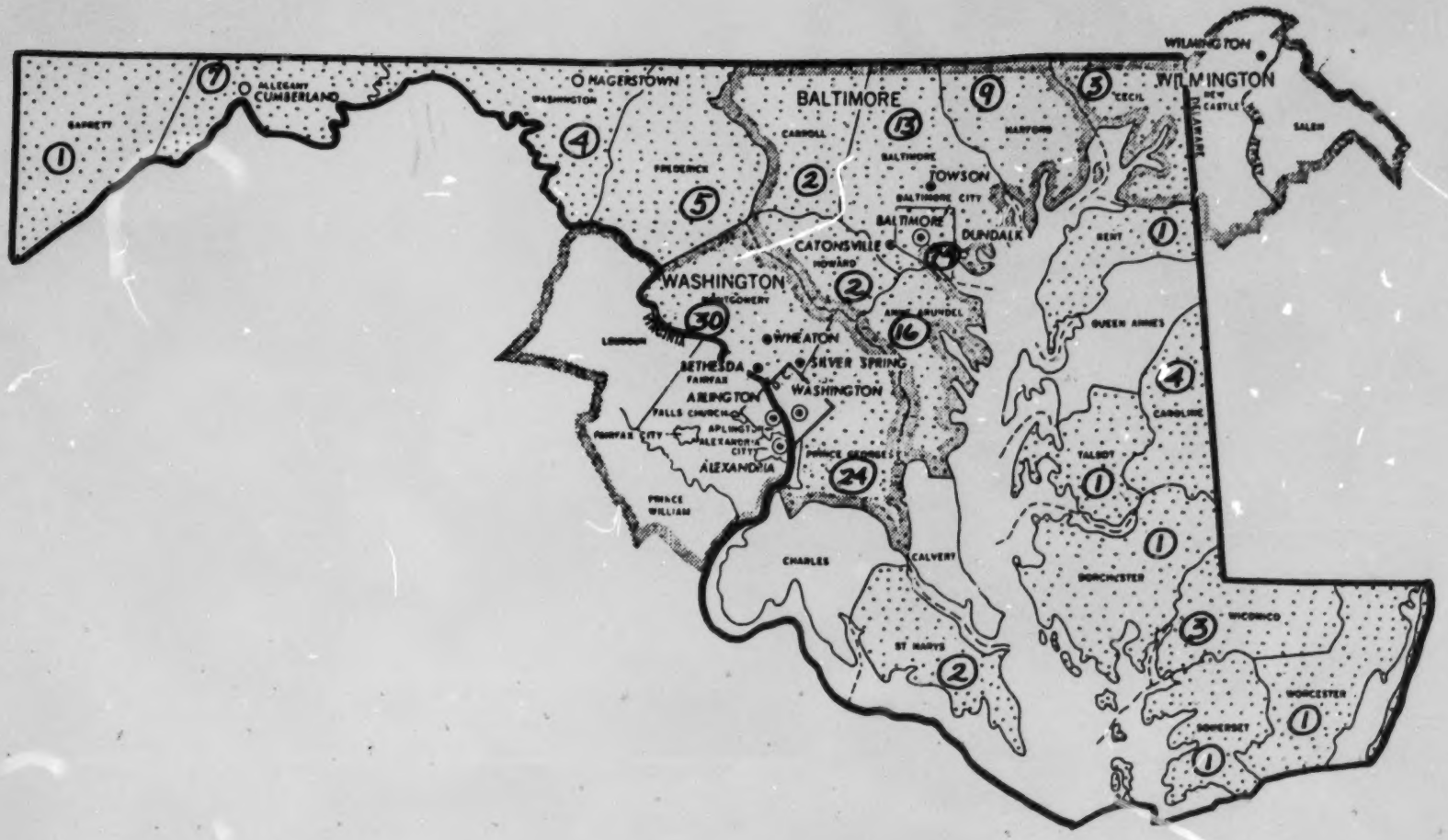
Population	5[illegible]09,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	465
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	28

OPTOMETRISTS 1973

N = 249
Active = 205

Ratio = 5.1/100,000

Total Counties = 24
Counties with O.D.'s = 21

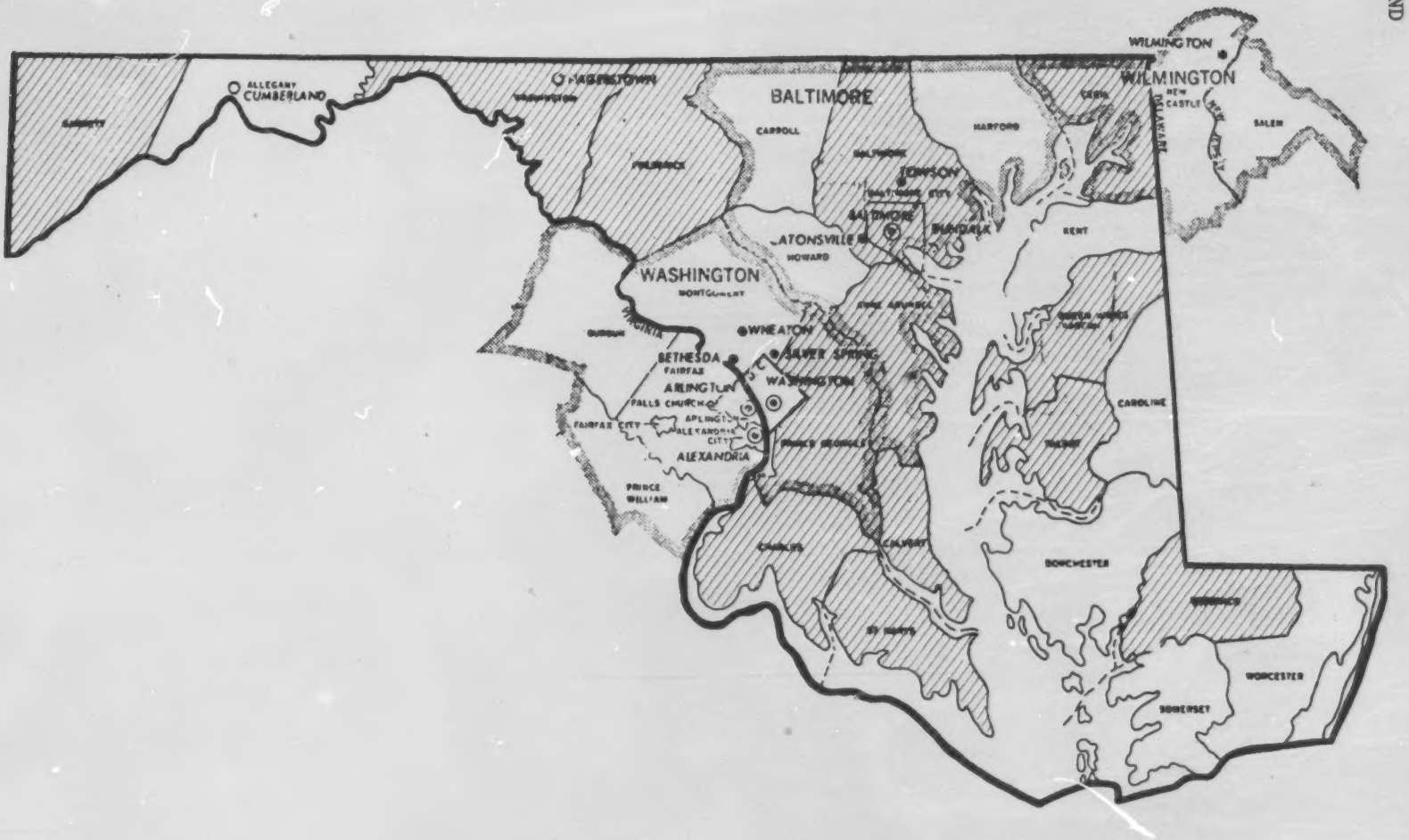


Source:
Division of Manpower Intelligence, DHEW, 1973

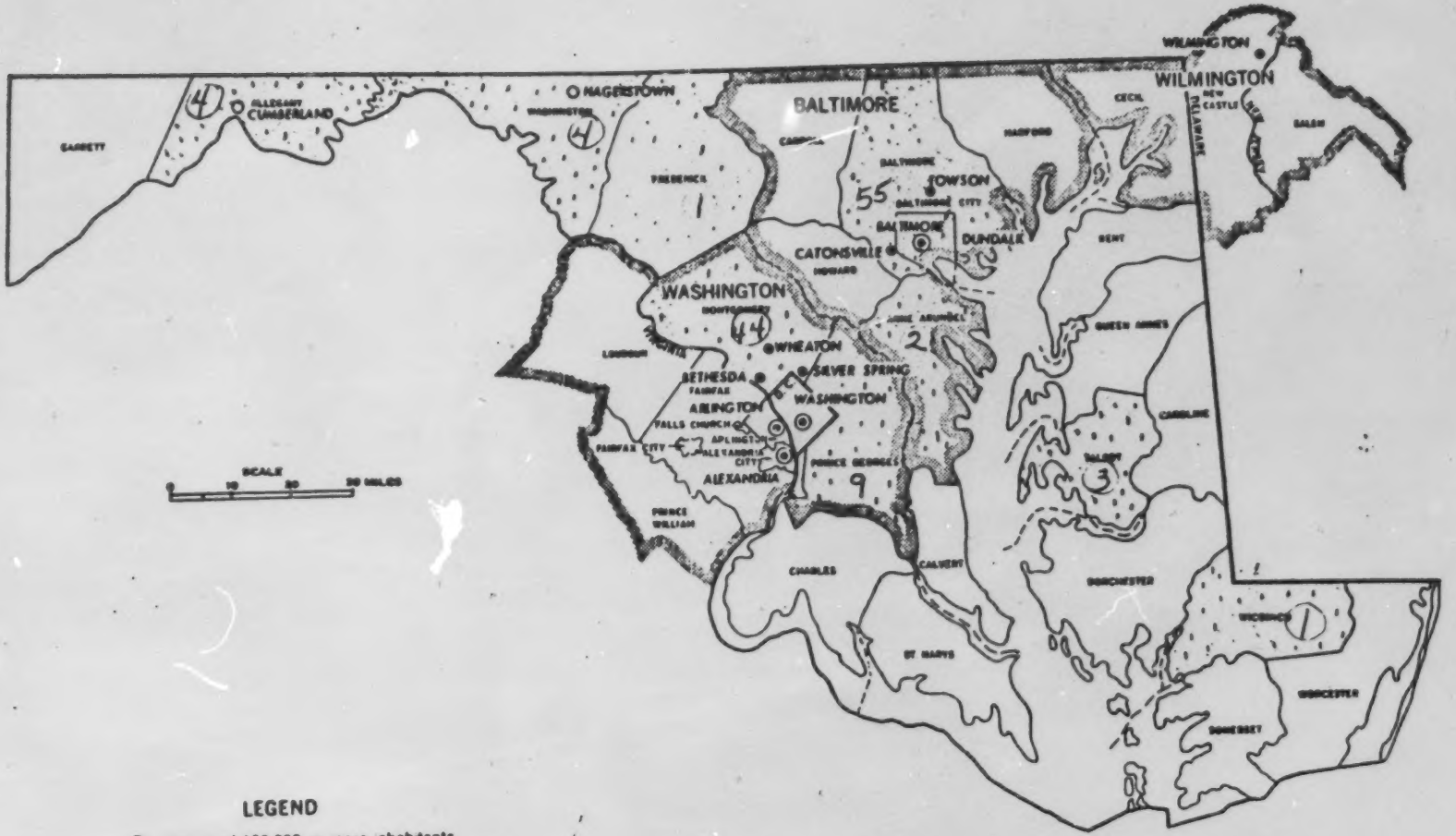
CRITICAL SHORTAGE AREAS: OPTOMETRISTS 1973

Total Counties = 24

Critical Shortage Counties = 13



Source:
Bureau of Health Resources Development, DHEW, 1973



LEGEND

- ◉ Places of 100,000 or more inhabitants
- ● Places of 50,000 to 100,000 inhabitants
- ○ Places of 25,000 to 50,000 inhabitants outside SMSA's

Standard Metropolitan Statistical Areas (SMSA's)

Board Certified Ophthalmologists
1973
N = 115 Ratio = 2.5/100,000
Total Counties = 24
Counties with Bd. Cert. Ophthalmologists = 9

Source: Red Book, Professional Press, Chicago, 1973.

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS

O P T O M E T R I S T S

MISSISSIPPI - 1973

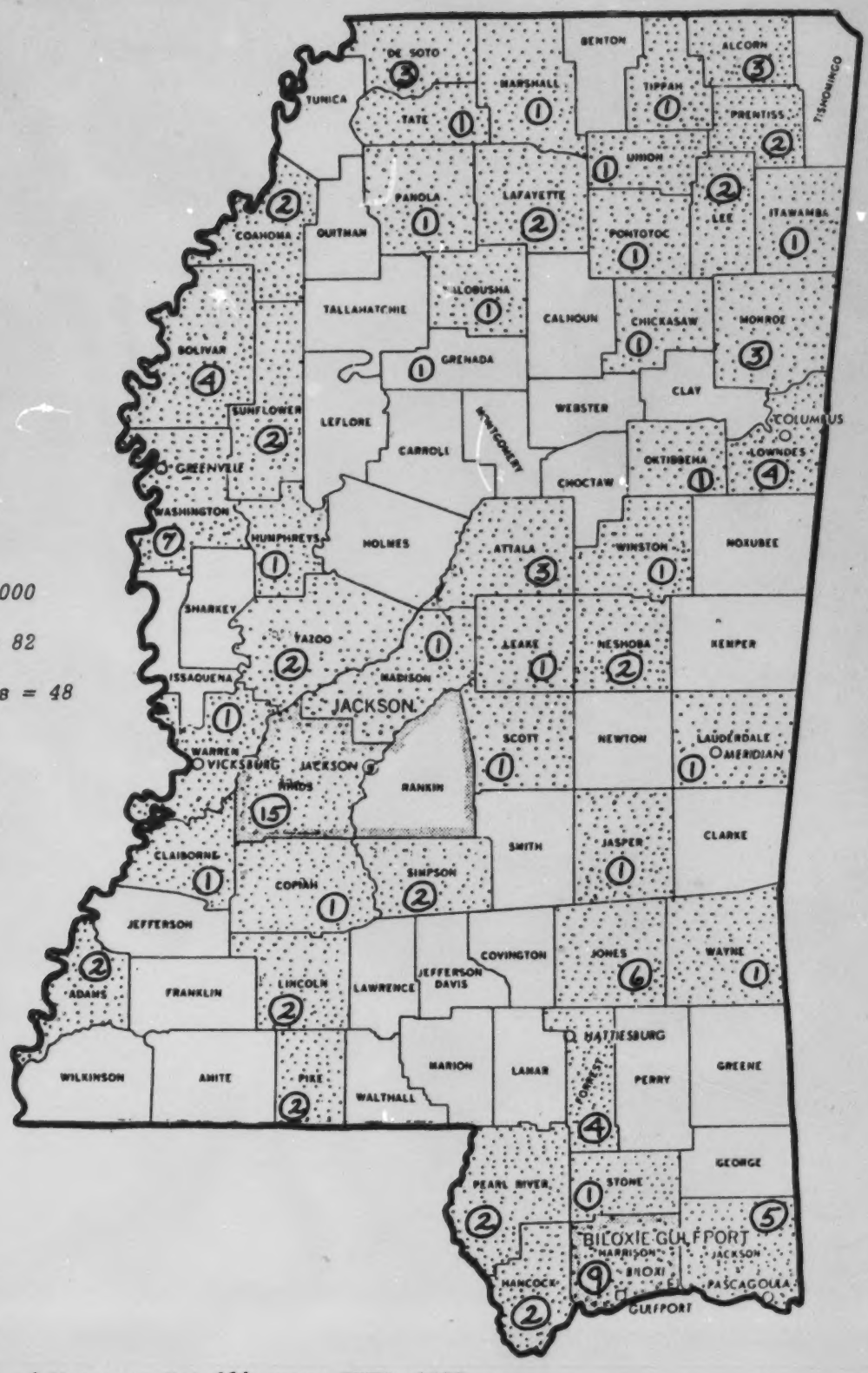
Population	2,263,000
Active Optometrists	115
Present Ratio	5.1/100,000
Deficit*	91
SREB Contracts	10/year (1974)

**Number needed to provide national average (9.1/100,000).*

MISSISSIPPI - 1990

Population	2,501,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	228
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	13

MISSISSIPPI



OPTOMETRISTS
1973

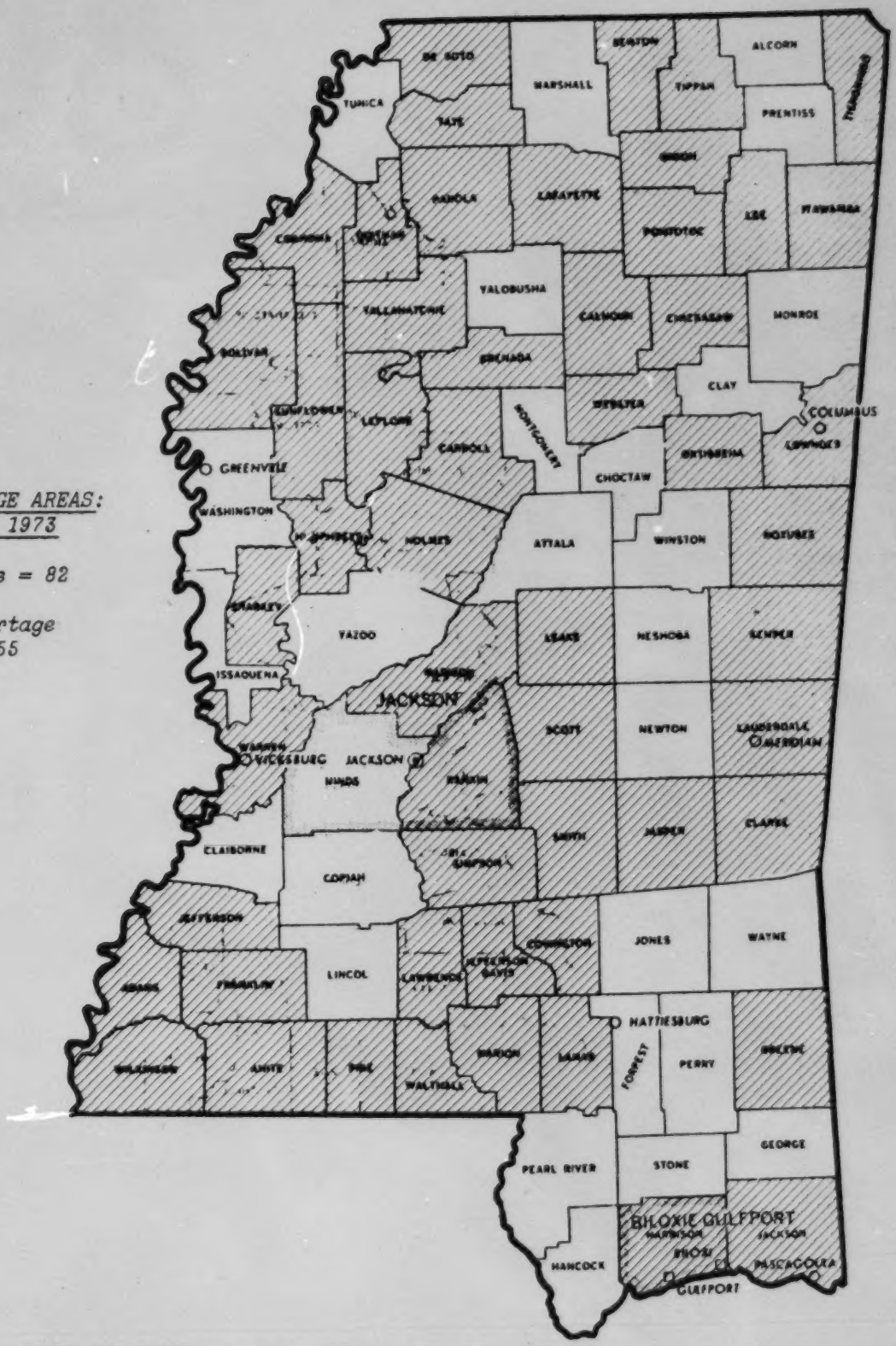
N = 132
Active = 115
Ratio = 5.1/100,000

Total Counties = 82

Counties with O.D.'s = 48

Source: Division of Manpower Intelligence, DHEW, 1973

MISSISSIPPI

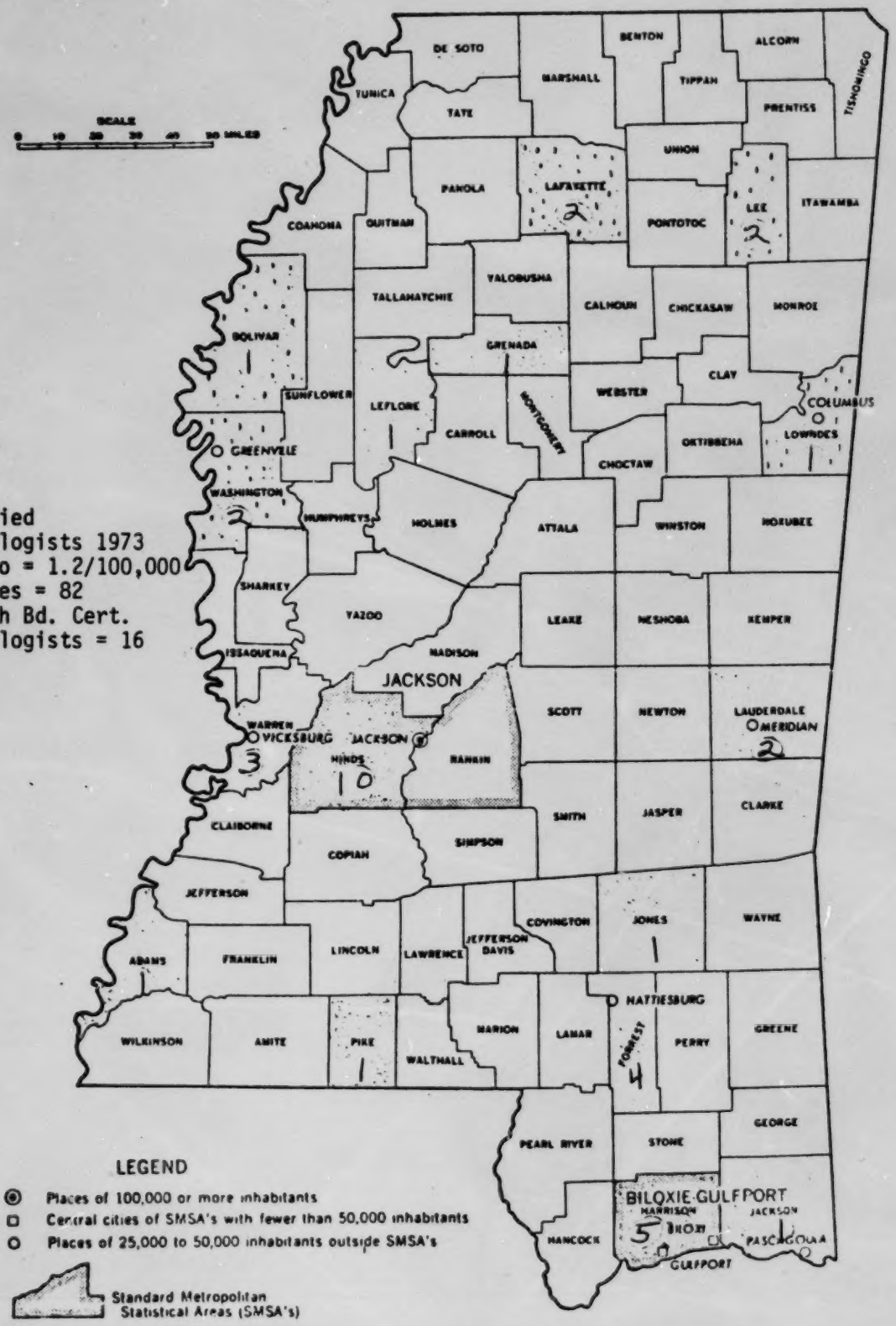


CRITICAL SHORTAGE AREAS:
OPTOMETRISTS 1973

Total Counties = 82

Critical Shortage Counties = 55

Source:
Bureau of Health Resources Development, DHEW, 1973



Board Certified
Ophthalmologists 1973
N = 39 Ratio = 1.2/100,000
Total Counties = 82
Counties with Bd. Cert.
Ophthalmologists = 16

LEGEND

- Places of 100,000 or more inhabitants
- Central cities of SMSA's with fewer than 50,000 inhabitants
- Places of 25,000 to 50,000 inhabitants outside SMSA's

Standard Metropolitan Statistical Areas (SMSA's)

Source: Red Book, Professional Press, Chicago, 1973.

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS

O P T O M E T R I S T S

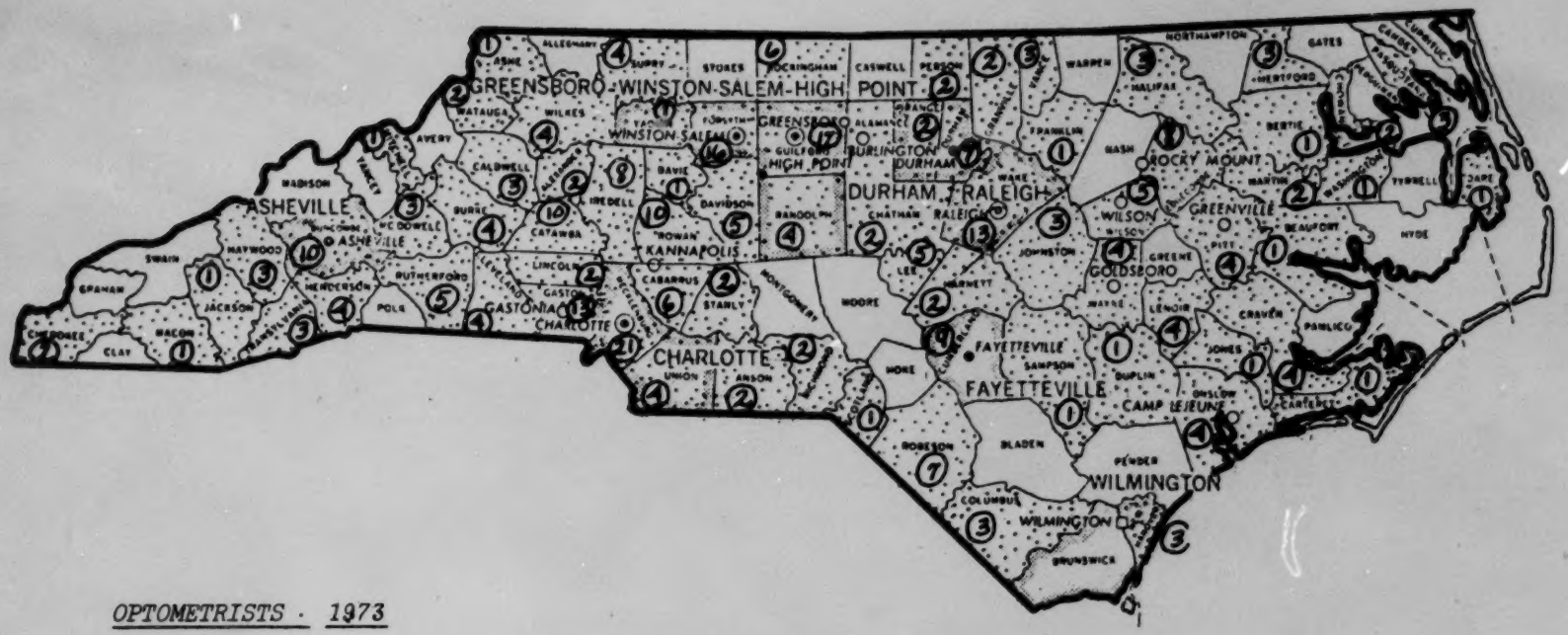
NORTH CAROLINA - 1973

Population	5,214,000
Active Optometrists	312
Present Ratio	6.0/100,000
Deficit*	162
SREB Contracts	16/year (1974)

**Number needed to provide national average (9.1/100,000).*

NORTH CAROLINA - 1990

Population	5,826,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	530
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	29

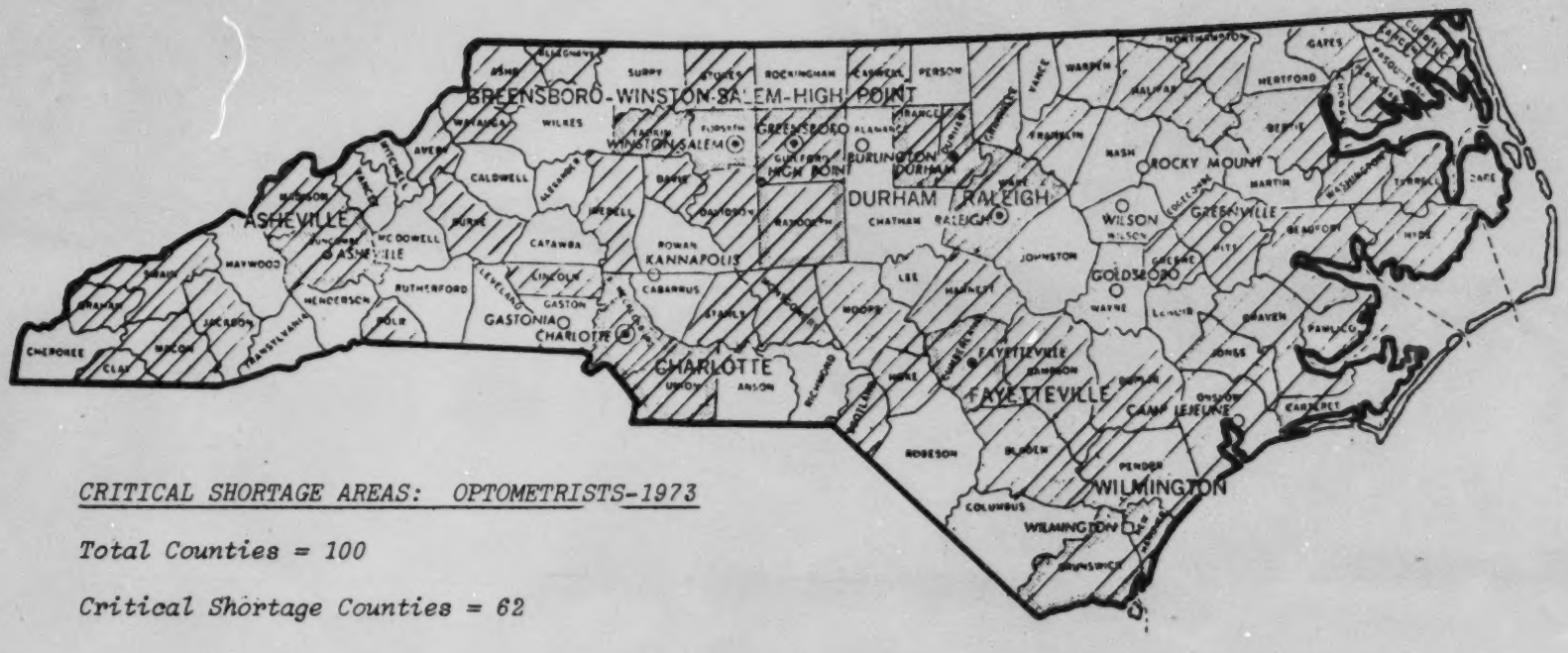


OPTOMETRISTS · 1973

N = 347
Active = 312
Ratio = 6.0/100,000

Total Counties = 100
Counties with O.D.'s = 73

Source: Division of Manpower Intelligence, DHEW, 1973



CRITICAL SHORTAGE AREAS: OPTOMETRISTS-1973

Total Counties = 100

Critical Shortage Counties = 62

Source: Bureau of Health Resources Development, DHEW, 1973

LEGEND

- Places of 100,000 or more inhabitants
- Places of 50,000 to 100,000 inhabitants
- Central cities of SMSA's with fewer than 50,000 inhabitants
- Places of 25,000 to 50,000 inhabitants outside SMSA's

Standard Metropolitan Statistical Areas (SMSA's)

SCALE

Board Certified Ophthalmologists
1973
N = 107 Ratio = 1.6/100,000
Total Counties = 100
Counties with Bd. Cert. Ophthalmologists = 25

Source: Red Book, Professional Press, Chicago, 1973.

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS

O P T O M E T R I S T S

SOUTH CAROLINA - 1973

Population	2,665,000
Active Optometrists	157
Present Ratio	5.9/100,000
Deficit*	86
SREB Contracts	10/year (1974)

**Number needed to provide national average (9.1/100,000).*

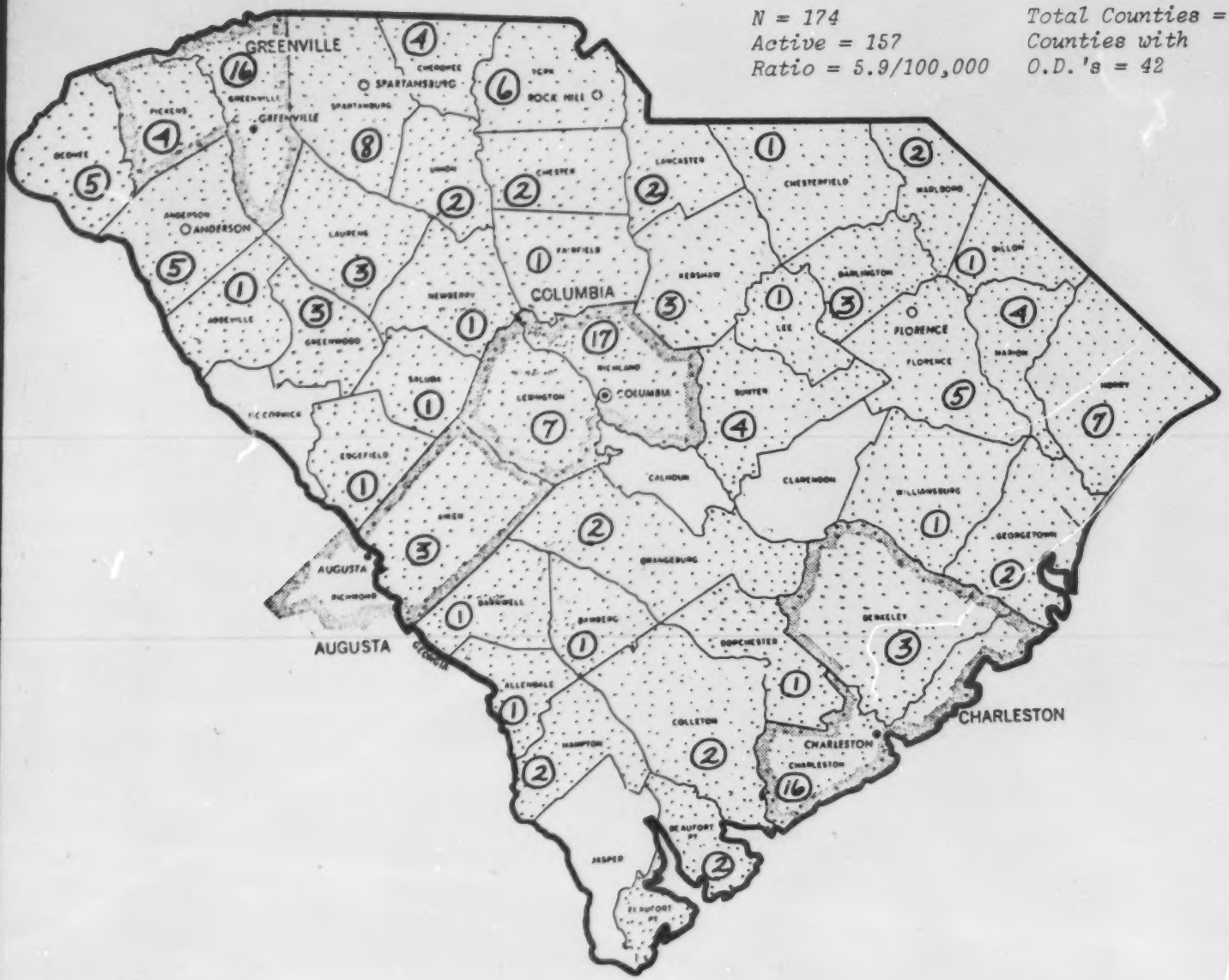
SOUTH CAROLINA - 1990

Population	2,961,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	269
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	15

OPTOMETRISTS 1973

N = 174
Active = 157
Ratio = 5.9/100,000

Total Counties = 46
Counties with
O.D.'s = 42



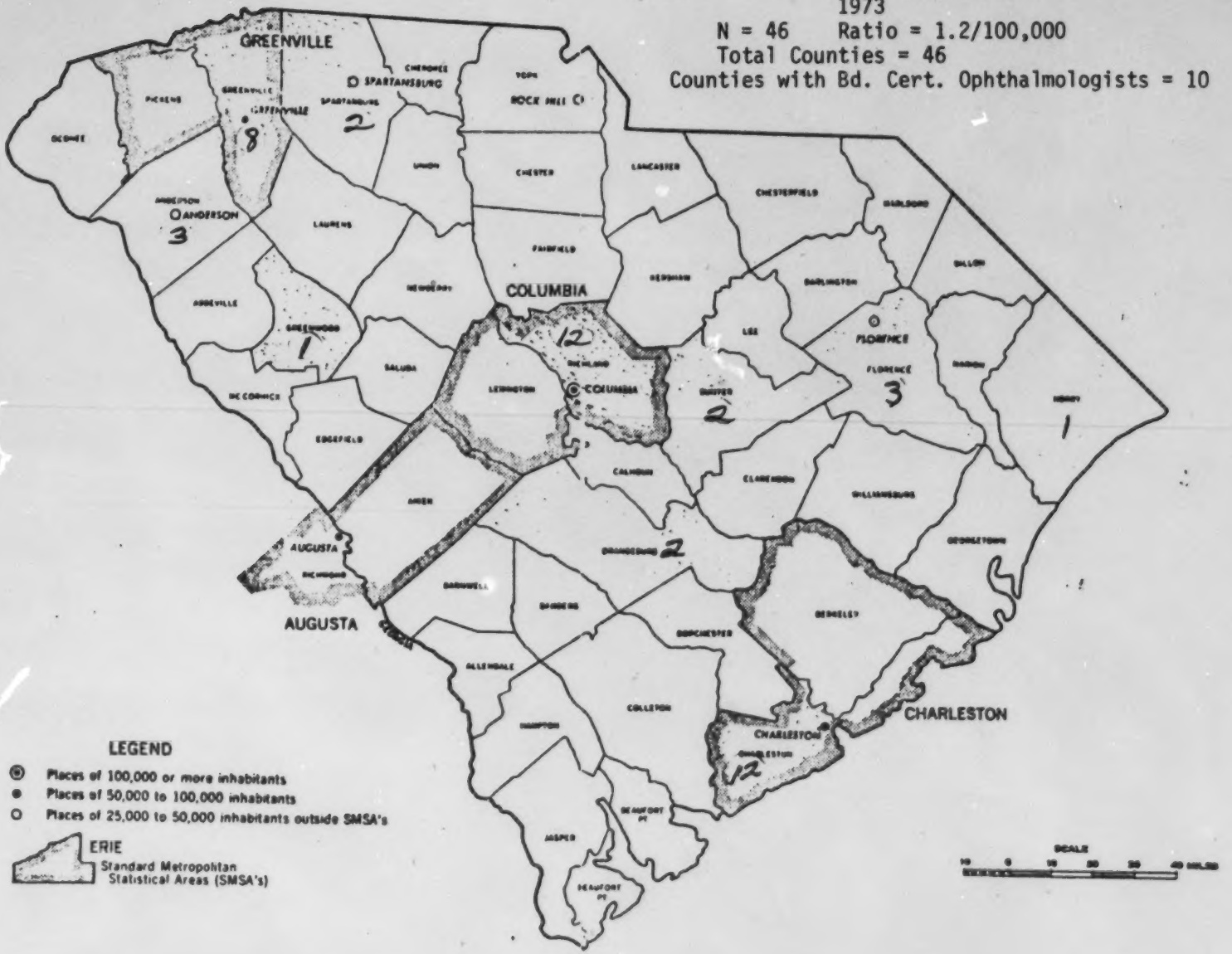
Source:
Division of Manpower Intelligence, DHEW, 1973

CRITICAL SHORTAGE AREAS: OPTOMETRISTS 197

Total Counties = 46
Critical Shortage Counties = 19

Source:
Bureau of Health Resources Development, DHEW, 1973

Board Certified Ophthalmologists
1973
N = 46 Ratio = 1.2/100,000
Total Counties = 46
Counties with Bd. Cert. Ophthalmologists = 10



Source: Red Book, Professional Press, Chicago, 1973.

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS

O P T O M E T R I S T S

TENNESSEE - 1973

Population	4,031,000
Active Optometrists	310
Present Ratio	7.6/100,000
Deficit*	57
SREB Contracts**	12/year (1974)

Number needed to provide national average (9.1/100,000).
**Southern College of Optometry (private) located in Memphis.*

TENNESSEE - 1990

Population	
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	407
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	21

OPTOMETRISTS-1973

N = 385
Active = 310
Ratio = 7.6/100,000

Total Counties = 95
Counties with O.D.'s = 70

Source: Division of Manpower Intelligence, DHEW, 1973

CRITICAL SHORTAGE AREAS: OPTOMETRISTS-1973

Total Counties = 95

Critical Shortage Counties = 45

Source: Bureau of Health Resources Development, DHEW, 1973

Board Certified Ophthalmologists
1973
N = 95 Ratio = 1.9/100,000
Total Counties = 95
Counties with Bd. Cert. Ophthalmologists = 17

LEGEND

- Places of 100,000 or more inhabitants
- Places of 25,000 to 50,000 inhabitants outside SMSA's
- Standard Metropolitan Statistical Areas (SMSA's)

Source: Red Book, Professional Press, Chicago, 1973.

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS

O P T O M E T R I S T S

TEXAS - 1973

Population	11,649,000
Active Optometrists	760
Present Ratio	6.5/100,000
Deficit*	300

College of Optometry, University of Houston
*Number needed to provide national average (9.1/100,000).

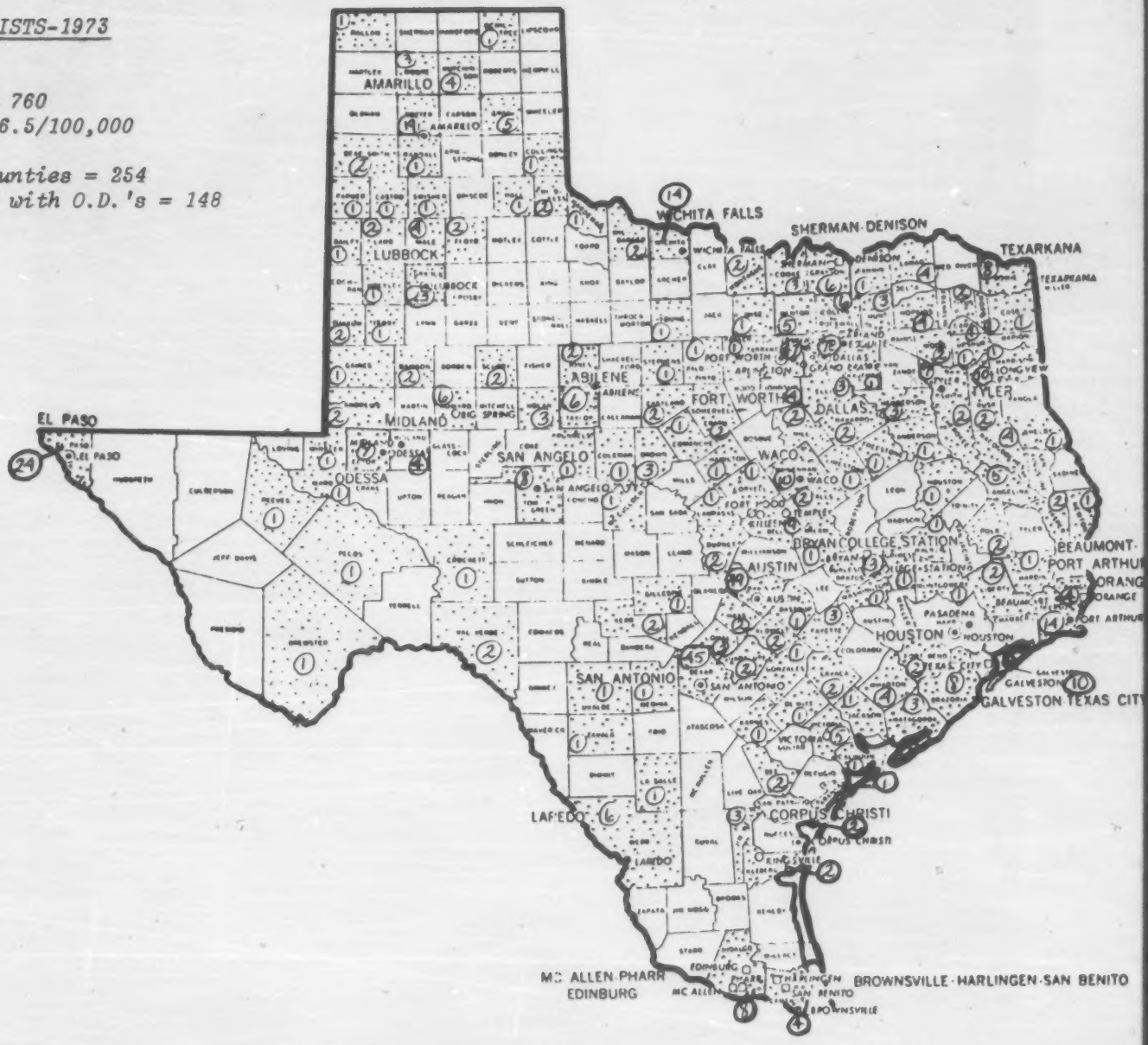
TEXAS - 1990

Population	14,103,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	1,283
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	71

OPTOMETRISTS-1973

N = 859
Active = 760
Ratio = 6.5/100,000

Total Counties = 254
Counties with O.D.'s = 148



Source: Division of Manpower Intelligence, DHEW, 1973

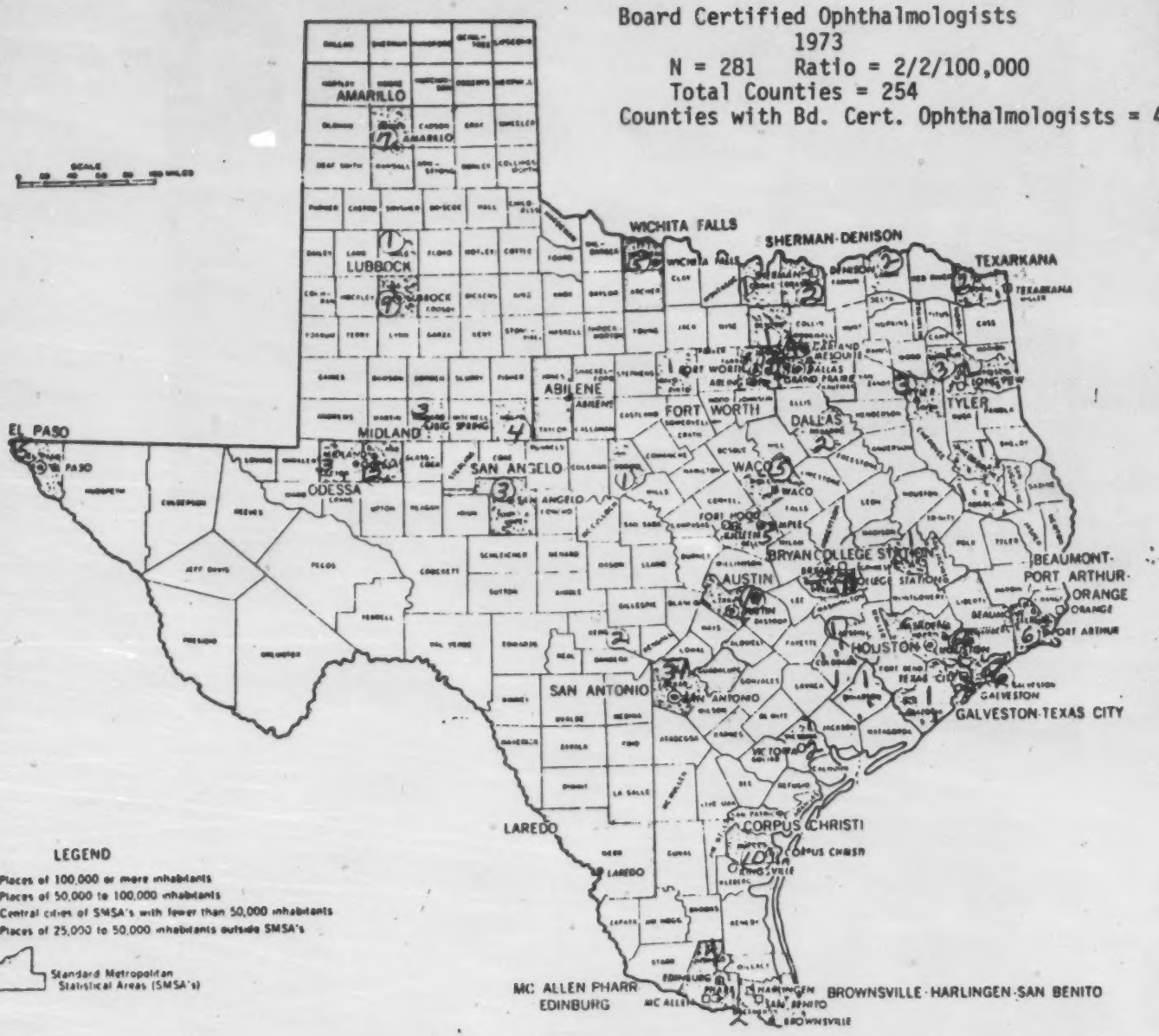
CRITICAL SHORTAGE AREAS:
OPTOMETRISTS-1973

Total Counties = 254

Critical Shortage Counties = 85

Source: Bureau of Health Resources Development, DHEW, 1973

Board Certified Ophthalmologists
1973
N = 281 Ratio = 2/2/100,000
Total Counties = 254
Counties with Bd. Cert. Ophthalmologists = 43



Source: Red Book, Professional Press, Chicago, 1973.

O P T O M E T R I S T S

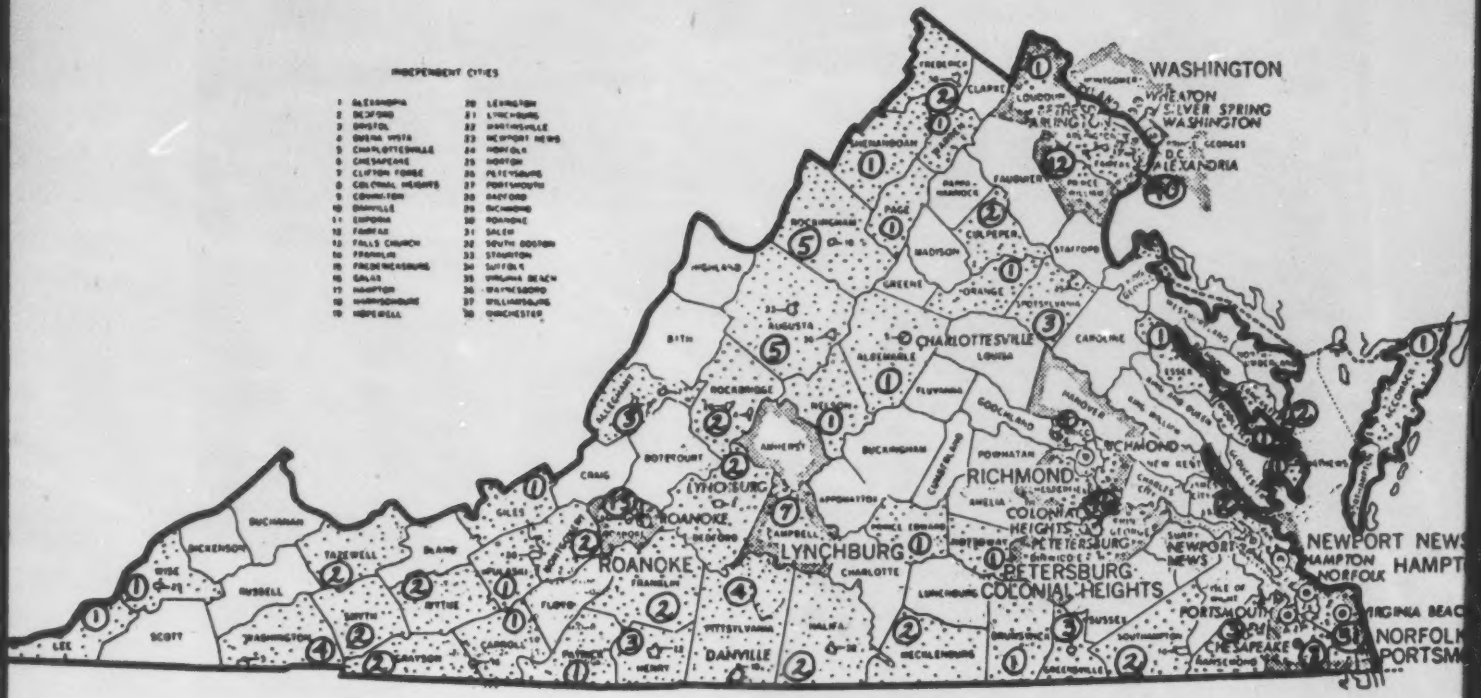
VIRGINIA - 1973

Population	4,764,000
Active Optometrists	290
Present Ratio	6.1/100,000
Deficit*	144
SREB Contracts	5/year (1974)

**Number needed to provide national average (9.1/100,000).*

VIRGINIA - 1990

Population	5,548,000
Target Ratio /100,000	9.1 (national average)
Total Active Optometrists	505
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	29



OPTOMETRISTS-1973

N = 333
Active = 290
Ratio = 6.1/100,000

Total Counties and Independent Cities = 134

Total Counties and Independent Cities with O.D.'s = 72

Source: Division of Manpower Intelligence, DHEW, 1973

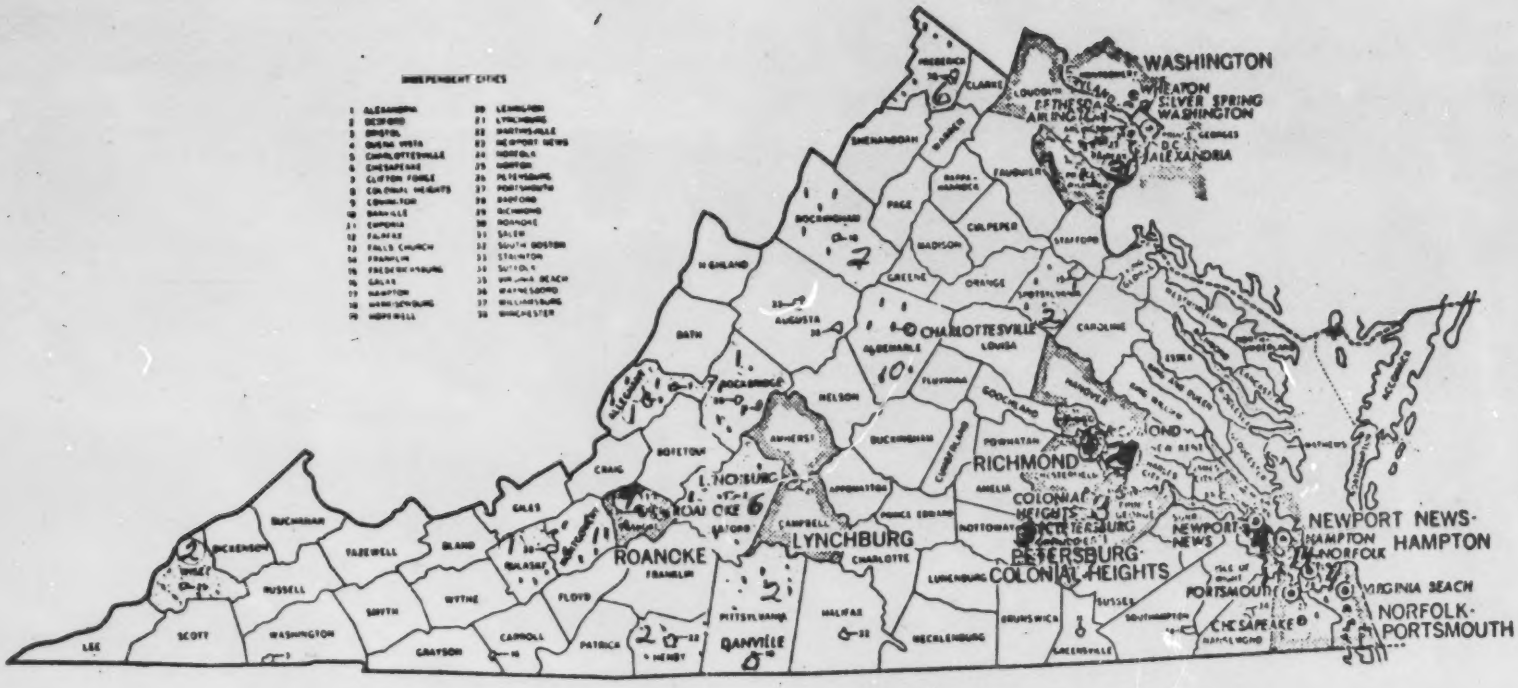
CRITICAL SHORTAGE AREAS: OPTOMETRISTS-1973

Total Counties = 96
Critical Shortage Counties = 45

Total Independent Cities = 38
Critical Shortage Cities = 5

Source: Bureau of Health Resources Development, DHEW, 1973

U.S. DEPARTMENT OF COMMERCE Social and Economic Statistics Administration BUREAU OF THE CENSUS



Board Certified Ophthalmologists
1973
N = 129 Ratio = 1.7/100,000
Total Counties and Independent Cities = 134
Counties and Independent Cities with Bd. Cert. Ophthalmologists = 30

LEGEND

- Places of 100,000 or more inhabitants
- Places of 50,000 to 100,000 inhabitants
- Central cities of SMSA's with fewer than 50,000 inhabitants
- Places of 25,000 to 50,000 inhabitants outside SMSA's

Standard Metropolitan Statistical Areas (SMSA's)

Source: Red Book, Professional Press, Chicago, 1973.

O P T O M E T R I S T S

WEST VIRGINIA - 1973

Population	1,781,000
Active Optometrists	131
Present Ratio	7.3/100,000
Deficit*	31
SREB Contracts	6/year (1974)

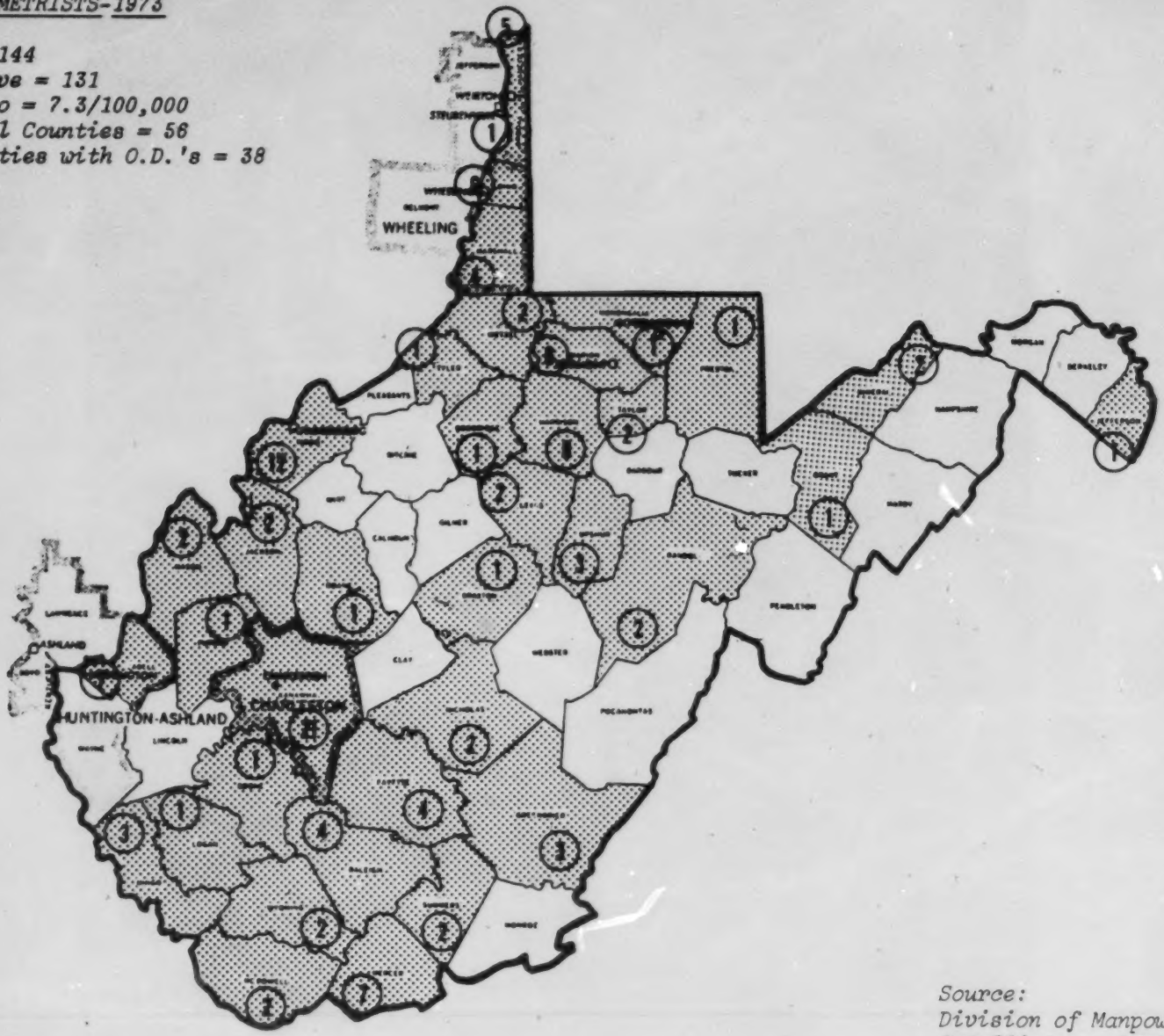
**Number needed to provide national average (9.1/100,000).*

WEST VIRGINIA - 1990

Population	4,394,000
Target Ratio/100,000	9.1 (national average)
Total Active Optometrists	156
Number of Optometry Students Per Year (considering death, disability, and retirement) needed to produce 9.1/100,000 active optometrists in 1990	8

OPTOMETRISTS-1973

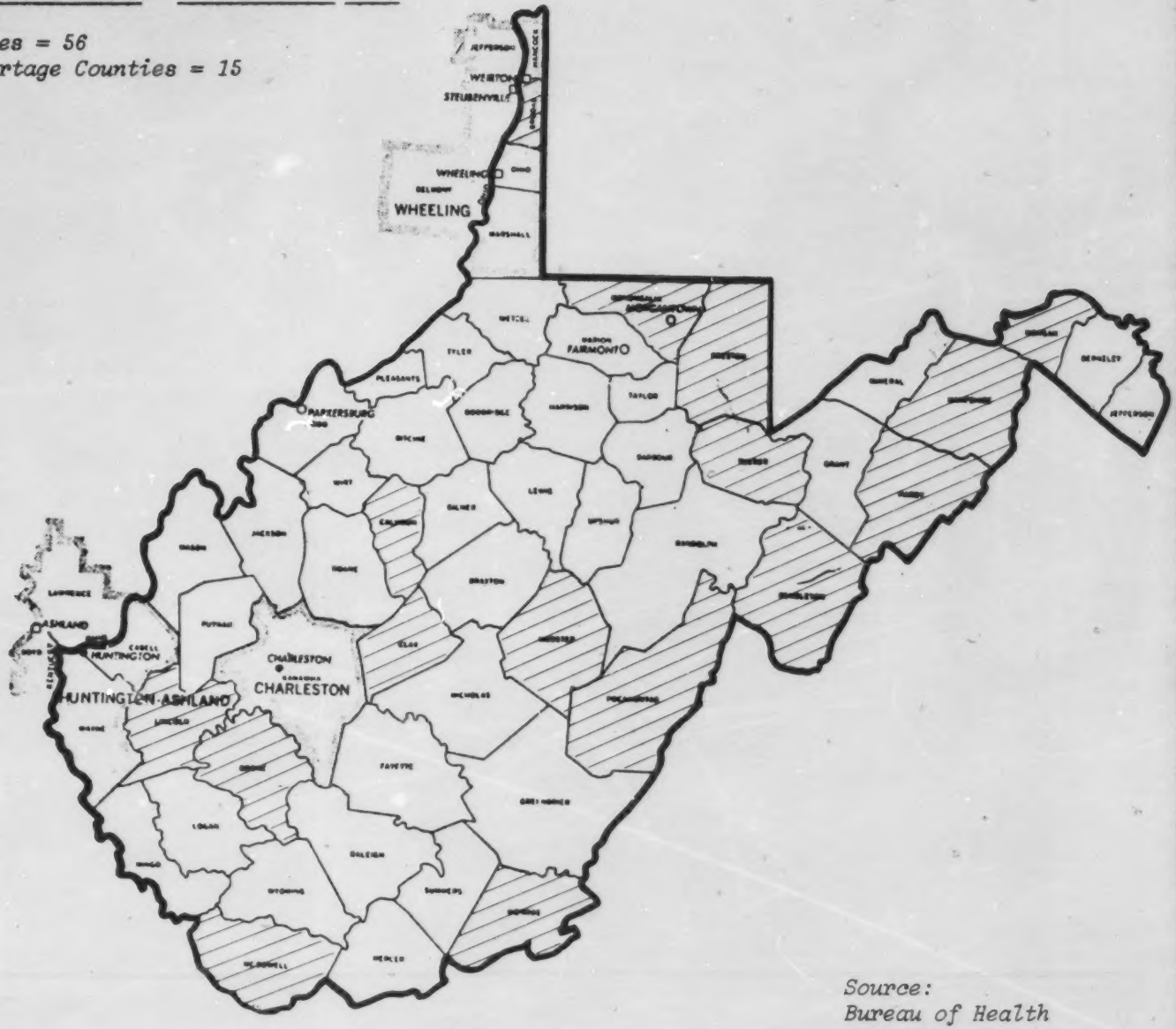
N = 144
Active = 131
Ratio = 7.3/100,000
Total Counties = 56
Counties with O.D.'s = 38



Source:
Division of Manpower Intelligence, DHEW, 1973.

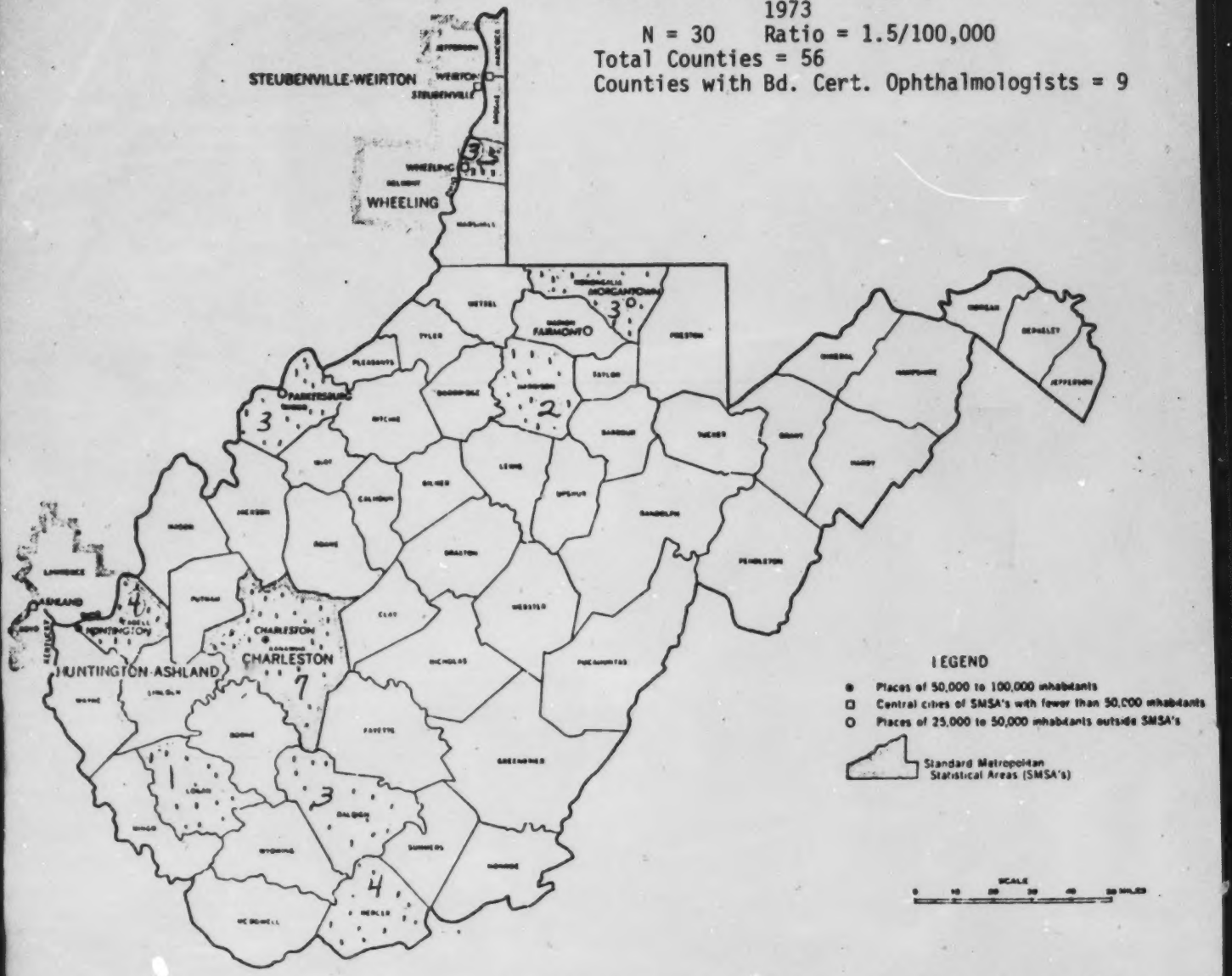
CRITICAL SHORTAGE AREAS: OPTOMETRISTS 1973

Total Counties = 56
Critical Shortage Counties = 15



Source:
Bureau of Health Resources Development, DHEW, 1973.

Board Certified Ophthalmologists
1973
N = 30 Ratio = 1.5/100,000
Total Counties = 56
Counties with Bd. Cert. Ophthalmologists = 9



Source: Red Book, Professional Press, Chicago, 1973.

APPENDIX B

Statement of Association for Academic Health Centers

State of Association of Schools and Colleges of Optometry

APPENDIX B

RECOMMENDATIONS BY THE LIAISON COMMITTEE FOR OPTOMETRY OF THE ASSOCIATION FOR ACADEMIC HEALTH CENTERS REGARDING THE RELATIONS BETWEEN OPHTHALMOLOGY AND OPTOMETRY

Statement 1

THE PROFESSIONS OF OPTOMETRY AND OPHTHALMOLOGY ARE BOTH PRIMARY ENTRY POINTS INTO THE FIELD OF EYE AND VISION CARE.

Explanation: There has been considerable discussion concerning primary entry points into health care delivery. Each profession fears that the other wishes to be considered the only entry point into vision care programs. Statement 1 is intended to promote the concept of the patient's freedom of choice. The individual patient has the right to choose either profession as the primary entry point. Reciprocal referrals between the two professions for specialized services, as needed, should be strongly encouraged and facilitated.

Statement 2

THE PROFESSIONS OF OPTOMETRY AND OPHTHALMOLOGY RECOGNIZE AND SUBSCRIBE TO THE CONCEPT THAT EACH HAS THE RIGHT TO EXIST AS AN INDEPENDENT AND COOPERATING HEALTH CARE PROFESSION.

Explanation: Both optometry and ophthalmology have, from time to time, expressed feelings that each plans to restrict or limit the scope of the other. This statement is an attempt to allay these concerns.

Statement 3

THE PURPOSE OF INCREASING THE BIO-MEDICAL BASE OF OPTOMETRIC EDUCATION IS TO BETTER PREPARE THE OPTOMETRIST TO PERFORM HIS FUNCTIONS INCLUDING APPROPRIATE REFERRAL OF PATIENTS TO OPHTHALMOLOGISTS AND OTHER HEALTH PROFESSIONALS.

Explanation: Most ophthalmologists agree that enhancing the optometric educational programs in the area of ocular pathology would be beneficial for patient care as it would facilitate patient referral. However, many ophthalmologists are deeply concerned that optometrists might use this education as a so called "foot in the door" for practicing medicine. This statement is an attempt to allay these fears.

Statement 4

THE OPTIMAL EDUCATIONAL ENVIRONMENT FOR SCHOOLS OF OPTOMETRY IS WITHIN AN ACADEMIC HEALTH CENTER.

Explanation: Maximum efficiency will occur when health care education and delivery are coordinated and cooperative. The academic health center is the logical environment for such educational programs. A crucial task,

especially in an area like vision care where antagonism has been traditional, will be to coordinate programs for cooperative efficiency while still maintaining the individual integrity of each profession.

Statement 5

ANY UTILIZATION OF PHARMACEUTICAL AGENTS BY OPTOMETRISTS IS FOR THE PURPOSE OF IMPROVING RECOGNITION OF CONDITIONS REQUIRING REFERRAL FOR APPROPRIATE MEDICAL OR OTHER HEALTH SERVICES. IT IS NOT FOR TREATMENT OF ANY HEALTH PROBLEM. UTILIZATION OF DIAGNOSTIC AGENTS ASSUMES THE LOCAL LEGAL AUTHORIZATION AND PROFESSIONAL LIABILITY FOR THEIR USE.

Statement 6

IT IS IN THE BEST INTERESTS OF THE PUBLIC AND BOTH PROFESSIONS FOR OPHTHALMOLOGISTS AND OPTOMETRISTS TO TRAIN AND USE TECHNICAL ASSISTANTS UNDER MUTUALLY ACCEPTABLE GUIDELINES FOR SUPERVISION AND CONTROL.

Explanation: The increasing demand for health care services requires the efficient utilization of technically trained assistants. These assistants must be adequately trained and directly and personally supervised in a utilization designed to maximize the quality, as well as quantity, of health care delivery. They are not to be used for economic or power purposes by any health care professional.

Statement 7

INCREASED PARTICIPATION BY EACH PROFESSION WOULD ENHANCE THE EDUCATIONAL PORGRAMS OF BOTH OPHTHALMOLOGY AND OPTOMETRY.

Statement 8

QUALITY ASSURANCE OF APPROPRIATE REFERRALS SHOULD BE ESTABLISHED BY PARTICIPATION OF OPHTHALMOLOGY AND OPTOMETRY IN A REVIEW MECHANISM TO IDENTIFY NEEDS AND IMPLEMENT PROGRAMS FOR CONTINUING EDUCATION.

Explanation: Tissue committees in hospitals have demonstrated the value of interdisciplinary participation in quality control procedures. Similarly, interprofessional groups of optometrists and ophthalmologists could develop quality assurance in the referral mechanisms of vision care programs.

STATEMENT ON NEW SCHOOLS AND COLLEGES OF OPTOMETRY

Adopted Unanimously by the Board of Directors of
The Association of Schools and Colleges of Optometry
Washington, D.C. September 12, 1974

This statement is prepared to present the conditions the Association of Schools and Colleges of Optometry holds are important to the development of new schools.

1. Under appropriate conditions, the most advantageous location for a new school or college of optometry is in the academic health center of a state university.

2. Optometry should have separate status as a professional school or college, administratively on the same level as medicine and dentistry, within the health center.

3. There should be strong central administrative support for the school or college of optometry and commitment to interdisciplinary development and interaction.

4. There should be shared basic health science programs for students of the health professions where appropriate.

5. There should be the opportunity for development of optometric clinical services in the various patient care facilities of the center.

6. There should be the opportunity to develop interdisciplinary research programs of mutual interest.

7. There should be a commitment to graduate and continuing education for the further development of practicing optometrists and future educators.

8. The size of the entering class of professional students should be approximately 60 students.

9. The school should be located in a community of at least 200,000 population to provide an adequate clinical base for the program.

10. The school should, where possible, be a regional resource for the development of optometric manpower and vision care referral service.

11. There should be a commitment of both adequate capital funds and operating support to provide for the orderly development of a program of excellence in optometric education.

12. There should be an established faculty-student ratio of not less than one faculty member per five students.